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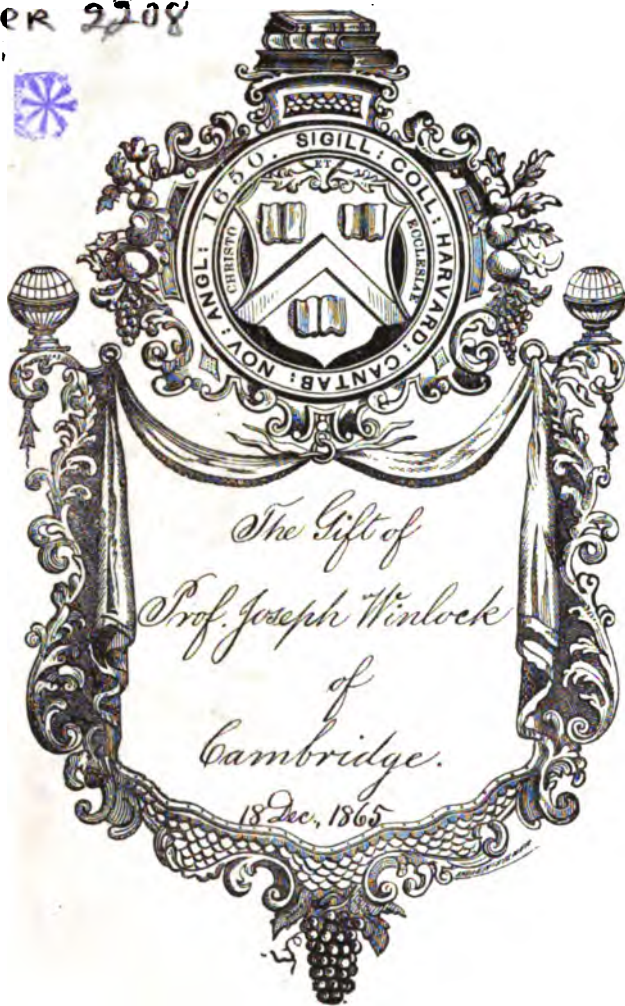
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AERICAN EPHEMERIS

AND

NAUTICAL ALMANAC.

FOR THE YEAR

1867.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF THE NAVY.

BUREAU OF NAVIGATION,
WASHINGTON.

1865.

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P R E F A C E .

THE preparation of the American Ephemeris and Nautical Almanac was begun in the latter part of the year 1849, in accordance with an act of Congress, approved on the 3d of March of that year. An account of this preparation and the values of the constants adopted will be found in the Preface and Appendix of the first volume, for the year 1855.

In the volume for the year 1865 several important changes were introduced. The Star Ephemeris was greatly enlarged, and the space given to Moon Culminations and Moon-Culminating Stars was greatly reduced. Mean Solar Time, instead of Sidereal Time, was used in the dates of the Ephemeris for the Meridian of Washington, and BESSEL'S notation in the formulas for star reductions was adopted instead of BAILY'S. Other changes of less importance, mentioned in the Explanation and Appendix, were made.

In the volume for 1867 the constants for facilitating the reduction of the Fixed Stars, p. 254, are given for every day, instead of for every fifth day. Tables for correcting *A* and *B* for small terms of nutation, and a list of occultations visible in the territory of the United States west of the Mississippi River, have been added to the Appendix.

JOSEPH WINLOCK,
Prof. Math. U. S. Navy, Superintendent.

September 7, 1865.

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CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1867, WHICH COMPRISES THE LATTER PART OF THE 91ST AND THE BEGINNING OF THE 92D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO

The year 6580 of the Julian Period ;

“ 7375 – 76 of the Byzantine era ;

“ 5627 – 28 of the Jewish era ;

“ 2620 since the foundation of Rome, according to Varro ;

“ 2614 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February, of the 3967th year of the Julian Period, corresponding according to the chronologists to the 747th, and according to the astronomers to the 746th year before the birth of Christ ;

“ 2643 of the Olympiads, or the third year of the 661st Olympiad, commencing in July, 1865, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period ;

“ 2179 of the Grecian era, or the era of the Seleucidæ ;

“ 1583 of the era of Diocletian.

The year 1284 of the Mohammedan era, or the era of the Hegira, begins on the 5th of May, 1867.

The first day of January of the year 1867 is the 2,402,968th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	F	Solar Cycle	28
Epact	25	Roman Indiction	10
Lunar Cycle or Golden Number	6	Julian Period	6580

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, &c.

<p>☉ The Sun.</p> <p>☾ The Moon.</p> <p>☿ Mercury.</p> <p>♀ Venus.</p> <p>♁ or ♂ The Earth.</p>		<p>♂ Mars.</p> <p>♃ Jupiter.</p> <p>♄ Saturn.</p> <p>♅ Uranus.</p> <p>♆ Neptune.</p>
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SIGNS OF THE ZODIAC.

<p>Spring signs. {</p> <p style="margin-left: 20px;">1. ♈ Aries.</p> <p style="margin-left: 20px;">2. ♉ Taurus.</p> <p style="margin-left: 20px;">3. ♊ Gemini.</p> <p>Summer signs. {</p> <p style="margin-left: 20px;">4. ♋ Cancer.</p> <p style="margin-left: 20px;">5. ♌ Leo.</p> <p style="margin-left: 20px;">6. ♍ Virgo.</p>		<p>Autumn signs. {</p> <p style="margin-left: 20px;">7. ♎ Libra.</p> <p style="margin-left: 20px;">8. ♏ Scorpio.</p> <p style="margin-left: 20px;">9. ♐ Sagittarius.</p> <p>Winter signs. {</p> <p style="margin-left: 20px;">10. ♑ Capricornus.</p> <p style="margin-left: 20px;">11. ♒ Aquarius.</p> <p style="margin-left: 20px;">12. ♓ Pisces.</p>
--	--	--

ASPECTS.

♌	Conjunction, or having the same Longitude or Right Ascension.	
☐	Quadrature, or differing 90° in	" " "
♌	Opposition, or differing 180° in	" " "

ABBREVIATIONS.

<p>♊ Ascending Node.</p> <p>♋ Descending Node.</p> <p>N. North. S. South.</p> <p>E. East. W. West.</p> <p>• Degrees.</p>	|	<p>' Minutes of Arc.</p> <p>" Seconds of Arc.</p> <p>h Hours.</p> <p>m Minutes of Time.</p> <p>s Seconds of Time.</p>
--	--	---

ASTRONOMICAL EPHEMERIS

FOR THE USE OF

NAVIGATORS.

SYMBOLS

SIGNS

- ☉ The Sun.
- ☾ The Moon.
- ☿ Mercury.
- ♀ Venus.
- ♁ or ♂ The Earth.

- Spring signs. { 1. ♈ Aries
- { 2. ♉ Taurus
- { 3. ♊ Gemini
- Summer signs. { 4. ♋ Cancer
- { 5. ♌ Leo
- { 6. ♍ Virgo

- ♌ Conjunction.
- ☐ Quadrature.
- ♌ Opposition.

- ♊ Ascending
- ♋ Descending
- N. North.
- E. East.
- * Degrees.

AT GREENWICH MEAN NOON.

THE SUN'S															
Day of the Month.	Apparent Right Ascension.			Diff. for 1 hour.	Apparent Declination.			Diff. for 1 hour.	Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.				
	h	m	s		h	m	s		m			s	h	m	s
Tue.	1	18	46	24.22	11.044	S. 23	1	29.5	12.24	3	43.63	1.188	18	42	40.59
Wed.	2	18	50	49.12	11.031	22	56	21.9	13.39	4	11.97	1.174	18	46	37.15
Thur.	3	18	55	13.68	11.016	22	50	46.9	14.53	4	39.97	1.159	18	50	33.71
Fri.	4	18	59	37.86	10.999	22	44	44.6	15.66	5	7.60	1.143	18	54	30.26
Sat.	5	19	4	1.64	10.981	22	38	15.3	16.79	5	34.82	1.125	18	58	26.82
Sun.	6	19	8	24.98	10.962	22	31	19.1	17.90	6	1.60	1.106	19	2	23.38
Mon.	7	19	12	47.85	10.942	22	23	56.2	19.01	6	27.92	1.086	19	6	19.93
Tues.	8	19	17	10.20	10.921	22	16	6.8	20.10	6	53.71	1.064	19	10	16.49
Wed.	9	19	21	32.03	10.898	22	7	51.2	21.19	7	18.98	1.042	19	14	13.05
Thur.	10	19	25	53.31	10.874	21	59	9.6	22.26	7	43.71	1.018	19	18	9.60
Fri.	11	19	30	14.00	10.849	21	50	2.3	23.33	8	7.84	0.993	19	22	6.16
Sat.	12	19	34	34.09	10.823	21	40	29.7	24.38	8	31.37	0.967	19	26	2.72
Sun.	13	19	38	53.54	10.796	21	30	32.0	25.43	8	54.27	0.940	19	29	59.27
Mon.	14	19	43	12.31	10.768	21	20	9.3	26.46	9	16.48	0.912	19	33	55.83
Tues.	15	19	47	30.41	10.739	21	9	22.0	27.48	9	38.03	0.883	19	37	52.38
Wed.	16	19	51	47.82	10.710	20	58	10.4	28.49	9	58.88	0.854	19	41	48.94
Thur.	17	19	56	4.52	10.680	20	46	34.9	29.48	10	19.02	0.824	19	45	45.50
Fri.	18	20	0	20.49	10.650	20	34	35.8	30.46	10	38.44	0.794	19	49	42.05
Sat.	19	20	4	35.73	10.620	20	22	13.4	31.42	10	57.12	0.763	19	53	38.61
Sun.	20	20	8	50.23	10.589	20	9	27.9	32.37	11	15.07	0.732	19	57	35.16
Mon.	21	20	13	3.99	10.558	19	56	19.7	33.31	11	32.27	0.701	20	1	31.72
Tues.	22	20	17	16.99	10.526	19	42	49.2	34.23	11	48.71	0.669	20	5	28.28
Wed.	23	20	21	29.21	10.494	19	28	56.7	35.14	12	4.38	0.637	20	9	24.83
Thur.	24	20	25	40.65	10.461	19	14	42.6	36.03	12	19.26	0.604	20	13	21.39
Fri.	25	20	29	51.33	10.428	19	0	7.3	36.91	12	33.39	0.572	20	17	17.94
Sat.	26	20	34	1.22	10.395	18	45	11.1	37.77	12	46.72	0.539	20	21	14.50
Sun.	27	20	38	10.32	10.362	18	29	54.4	38.62	12	59.27	0.506	20	25	11.05
Mon.	28	20	42	18.63	10.329	18	14	17.5	39.45	13	11.02	0.473	20	29	7.61
Tues.	29	20	46	26.14	10.296	17	58	21.0	40.26	13	21.98	0.440	20	33	4.16
Wed.	30	20	50	32.85	10.263	17	42	5.2	41.06	13	32.13	0.406	20	37	0.72
Thur.	31	20	54	38.76	10.230	17	25	30.4	41.84	13	41.49	0.373	20	40	57.27
Fri.	32	20	58	44.66	10.196	S. 17	8	37.0	42.60	13	50.03	0.339	20	44	53.83

Note.—The Equation of Time for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.	
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.				Semi-diameter.
		^h ^m ^s	^s		[°] ['] ["]	["]					
Tues.	1	18 46 24.91	11.044	S. 23 1 28.8	12.24	16 18.38	71.09	3 43.71	1.188		
Wed.	2	18 50 49.89	11.031	22 56 20.9	13.39	16 18.38	71.04	4 12.05	1.174		
Thur.	3	18 55 14.53	11.016	22 50 45.7	14.53	16 18.37	70.99	4 40.06	1.159		
Fri.	4	18 59 38.80	10.999	22 44 43.3	15.66	16 18.36	70.94	5 7.70	1.143		
Sat.	5	19 4 2.66	10.981	22 38 13.8	16.79	16 18.34	70.88	5 34.92	1.125		
Sun.	6	19 8 26.08	10.962	22 31 17.3	17.90	16 18.32	70.82	6 1.71	1.106		
Mon.	7	19 12 49.03	10.942	22 23 54.1	19.01	16 18.30	70.76	6 28.03	1.086		
Tues.	8	19 17 11.46	10.921	22 16 4.5	20.10	16 18.27	70.69	6 53.83	1.064		
Wed.	9	19 21 33.36	10.898	22 7 48.7	21.19	16 18.24	70.62	7 19.11	1.042		
Thur.	10	19 25 54.71	10.874	21 59 6.8	22.26	16 18.20	70.54	7 48.84	1.018		
Fri.	11	19 30 15.47	10.849	21 49 59.1	23.33	16 18.16	70.46	8 7.97	0.993		
Sat.	12	19 34 35.63	10.823	21 40 26.2	24.38	16 18.11	70.38	8 31.50	0.967		
Sun.	13	19 38 55.14	10.796	21 30 28.2	25.43	16 18.06	70.30	8 54.39	0.940		
Mon.	14	19 43 13.98	10.768	21 20 5.2	26.46	16 18.00	70.21	9 16.62	0.912		
Tues.	15	19 47 32.13	10.739	21 9 17.6	27.48	16 17.94	70.12	9 38.17	0.883		
Wed.	16	19 51 49.59	10.710	20 58 5.7	28.49	16 17.87	70.02	9 59.02	0.854		
Thur.	17	19 56 6.35	10.680	20 46 29.9	29.48	16 17.80	69.92	10 19.16	0.824		
Fri.	18	20 0 22.38	10.650	20 34 30.5	30.46	16 17.72	69.82	10 38.58	0.794		
Sat.	19	20 4 37.67	10.620	20 22 7.7	31.42	16 17.63	69.72	10 57.26	0.763		
Sun.	20	20 8 52.22	10.589	20 9 21.8	32.37	16 17.54	69.62	11 15.20	0.732		
Mon.	21	20 13 6.02	10.558	19 56 13.3	33.31	16 17.44	69.52	11 32.40	0.701		
Tues.	22	20 17 19.06	10.526	19 42 42.4	34.23	16 17.33	69.41	11 48.84	0.669		
Wed.	23	20 21 31.32	10.494	19 28 49.6	35.14	16 17.22	69.30	12 4.51	0.637		
Thur.	24	20 25 42.80	10.461	19 14 35.2	36.03	16 17.10	69.19	12 19.37	0.604		
Fri.	25	20 29 53.51	10.428	18 59 59.6	36.91	16 16.98	69.08	12 33.51	0.572		
Sat.	26	20 34 3.48	10.395	18 45 3.1	37.77	16 16.88	68.97	12 46.84	0.539		
Sun.	27	20 38 12.56	10.362	18 29 46.1	38.62	16 16.73	68.86	12 59.37	0.506		
Mon.	28	20 42 20.90	10.329	18 14 8.9	39.45	16 16.60	68.75	13 11.12	0.473		
Tues.	29	20 46 28.43	10.296	17 58 12.0	40.26	16 16.46	68.64	13 22.08	0.440		
Wed.	30	20 50 35.16	10.263	17 41 55.9	41.06	16 16.32	68.52	13 32.23	0.406		
Thur.	31	20 54 41.09	10.230	17 25 20.9	41.84	16 16.17	68.41	13 41.58	0.373		
Fri.	32	20 58 46.21	10.196	S. 17 8 27.2	42.60	16 16.02	68.29	13 50.11	0.339		

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.			
		^h ^m ^s	^s		[°] ['] ^{''}	^s				
Tues.	1	18 46 24.22	11.044	S. 28 1' 29.5	12.24	3 43.63	1.188	18 42 40.59		
Wed.	2	18 50 49.12	11.031	22 56 21.9	13.39	4 11.97	1.174	18 46 37.15		
Thur.	3	18 55 13.68	11.016	22 50 46.9	14.53	4 39.97	1.159	18 50 33.71		
Fri.	4	18 59 37.86	10.999	22 44 44.6	15.66	5 7.60	1.143	18 54 30.26		
Sat.	5	19 4 1.64	10.981	22 38 15.3	16.79	5 34.82	1.125	18 58 26.82		
Sun.	6	19 8 24.98	10.962	22 31 19.1	17.90	6 1.60	1.106	19 2 23.38		
Mon.	7	19 12 47.85	10.942	22 23 56.2	19.01	6 27.92	1.086	19 6 19.93		
Tues.	8	19 17 10.20	10.921	22 16 6.8	20.10	6 53.71	1.064	19 10 16.49		
Wed.	9	19 21 32.03	10.898	22 7 51.2	21.19	7 18.98	1.042	19 14 13.05		
Thur.	10	19 25 53.31	10.874	21 59 9.6	22.26	7 43.71	1.018	19 18 9.60		
Fri.	11	19 30 14.00	10.849	21 50 2.3	23.33	8 7.84	0.993	19 22 6.16		
Sat.	12	19 34 34.09	10.823	21 40 29.7	24.38	8 31.37	0.967	19 26 2.72		
Sun.	13	19 38 53.54	10.796	21 30 32.0	25.43	8 54.27	0.940	19 29 59.27		
Mon.	14	19 43 12.31	10.768	21 20 9.3	26.46	9 16.48	0.912	19 33 55.83		
Tues.	15	19 47 30.41	10.739	21 9 22.0	27.48	9 38.03	0.883	19 37 52.38		
Wed.	16	19 51 47.82	10.710	20 58 10.4	28.49	9 58.88	0.854	19 41 48.94		
Thur.	17	19 56 4.52	10.680	20 46 34.9	29.48	10 19.02	0.824	19 45 45.50		
Fri.	18	20 0 20.49	10.650	20 34 35.8	30.46	10 38.44	0.794	19 49 42.05		
Sat.	19	20 4 35.73	10.620	20 22 13.4	31.42	10 57.12	0.763	19 53 38.61		
Sun.	20	20 8 50.23	10.589	20 9 27.9	32.37	11 15.07	0.732	19 57 35.16		
Mon.	21	20 13 3.99	10.558	19 56 19.7	33.31	11 32.27	0.701	20 1 31.72		
Tues.	22	20 17 16.99	10.526	19 42 49.2	34.23	11 48.71	0.669	20 5 28.28		
Wed.	23	20 21 29.21	10.494	19 28 56.7	35.14	12 4.38	0.637	20 9 24.83		
Thur.	24	20 25 40.65	10.461	19 14 42.6	36.03	12 19.26	0.604	20 13 21.39		
Fri.	25	20 29 51.33	10.428	19 0 7.3	36.91	12 33.39	0.572	20 17 17.94		
Sat.	26	20 34 1.22	10.395	18 45 11.1	37.77	12 46.72	0.539	20 21 14.50		
Sun.	27	20 38 10.32	10.362	18 29 54.4	38.62	12 59.27	0.506	20 25 11.05		
Mon.	28	20 42 18.63	10.329	18 14 17.5	39.45	13 11.02	0.473	20 29 7.61		
Tues.	29	20 46 26.14	10.296	17 58 21.0	40.26	13 21.98	0.440	20 33 4.16		
Wed.	30	20 50 32.85	10.263	17 42 5.2	41.06	13 32.13	0.406	20 37 0.72		
Thur.	31	20 54 38.76	10.230	17 25 30.4	41.84	13 41.49	0.373	20 40 57.27		
Fri.	32	20 58 43.86	10.196	S. 17 8 37.0	42.60	13 50.03	0.339	20 44 53.83		

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	1	280° 40' 16.4	40' 16.7	152.95	+0.34	.9926627	0.8	5 16 27.41
2	2	281 41 27.2	41 27.4	152.95	0.41	.9926656	1.6	5 12 31.52
3	3	282 42 38.3	42 38.3	152.95	0.47	.9926704	2.2	5 8 35.61
4	4	283 43 49.5	43 49.3	152.96	0.49	.9926769	2.8	5 4 39.69
5	5	284 45 0.6	45 0.2	152.96	0.47	.9926851	3.5	5 0 43.78
6	6	285 46 11.6	46 11.1	152.95	0.42	.9926949	4.3	4 56 47.87
7	7	286 47 22.3	47 21.7	152.94	0.34	.9927062	5.0	4 52 51.96
8	8	287 48 32.7	48 31.9	152.92	0.25	.9927193	5.8	4 48 56.04
9	9	288 49 42.6	49 41.6	152.90	0.14	.9927343	6.6	4 45 0.13
10	10	289 50 52.0	50 50.8	152.88	+0.02	.9927510	7.4	4 41 4.22
11	11	290 52 0.9	51 59.6	152.86	-0.11	.9927696	8.2	4 37 8.31
12	12	291 53 9.2	53 7.8	152.83	0.24	.9927902	9.0	4 33 12.40
13	13	292 54 16.8	54 15.2	152.80	0.36	.9928130	9.9	4 29 16.49
14	14	293 55 23.6	55 21.8	152.77	0.46	.9928381	10.9	4 25 20.58
15	15	294 56 29.5	56 27.5	152.74	0.54	.9928656	11.9	4 21 24.67
16	16	295 57 34.7	57 32.6	152.70	0.60	.9928955	13.0	4 17 28.76
17	17	296 58 39.1	58 36.9	152.67	0.63	.9929279	14.1	4 13 32.86
18	18	297 59 42.7	59 40.4	152.64	0.63	.9929630	15.2	4 9 36.94
19	19	299 0 45.6	0 43.1	152.61	0.60	.9930008	16.4	4 5 41.03
20	20	300 1 47.7	1 45.0	152.58	0.53	.9930414	17.5	4 1 45.13
21	21	301 2 49.1	2 46.3	152.55	0.44	.9930846	18.6	3 57 49.22
22	22	302 3 49.8	3 46.9	152.52	0.33	.9931306	19.7	3 53 53.31
23	23	303 4 49.9	4 46.9	152.49	0.20	.9931794	20.8	3 49 57.40
24	24	304 5 49.3	5 46.1	152.46	-0.07	.9932307	21.8	3 46 1.48
25	25	305 6 48.1	6 44.7	152.43	+0.07	.9932843	22.8	3 42 5.57
26	26	306 7 46.3	7 42.8	152.41	0.21	.9933403	23.8	3 38 9.66
27	27	307 8 43.9	8 40.3	152.38	0.33	.9933986	24.7	3 34 13.75
28	28	308 9 40.8	9 37.1	152.35	0.43	.9934590	25.6	3 30 17.84
29	29	309 10 36.9	10 33.0	152.32	0.51	.9935213	26.4	3 26 21.93
30	30	310 11 32.3	11 28.2	152.29	0.56	.9935853	27.1	3 22 26.02
31	31	311 12 27.0	12 22.8	152.26	0.58	.9936510	27.8	3 18 30.11
32	32	312 13 20.9	13 16.6	152.22	+0.58	.9937183	28.4	3 14 34.21

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	14 46.1	14 45.0	54 5.2	-0.43	54 1.1	-0.26	21 16.7	1.91	25.3
2	14 44.4	14 44.3	53 59.1	-0.10	53 58.8	+0.06	22 3.2	1.95	26.3
3	14 44.7	14 45.6	54 0.3	+0.19	54 3.3	0.32	22 50.6	1.99	27.3
4	14 46.8	14 48.4	54 7.8	0.43	54 13.6	0.53	23 38.6	2.00	28.3
5	14 50.3	14 52.4	54 20.5	0.63	54 28.6	0.71	♄		29.3
6	14 54.9	14 57.6	54 37.7	0.80	54 47.7	0.87	0 26.8	2.00	0.5
7	15 0.6	15 3.8	54 58.7	0.95	55 10.5	1.02	1 14.8	1.99	1.5
8	15 7.3	15 11.0	55 23.2	1.10	55 36.8	1.17	2 2.3	1.97	2.5
9	15 14.9	15 19.1	55 51.3	1.24	56 6.6	1.32	2 49.4	1.96	3.5
10	15 23.5	15 28.2	56 22.8	1.39	56 40.0	1.46	3 36.3	1.96	4.5
11	15 33.1	15 38.2	56 58.0	1.53	57 16.7	1.59	4 23.4	1.98	5.5
12	15 43.5	15 49.0	57 36.3	1.65	57 56.4	1.69	5 11.5	2.04	6.5
13	15 54.6	16 0.2	58 16.9	1.72	58 37.6	1.72	6 1.2	2.12	7.5
14	16 5.8	16 11.3	58 58.1	1.70	59 18.2	1.63	6 53.3	2.23	8.5
15	16 16.5	16 21.3	59 37.2	1.53	59 54.7	1.38	7 48.4	2.35	9.5
16	16 25.5	16 29.0	60 10.2	1.19	60 23.2	0.96	8 46.4	2.47	10.5
17	16 31.7	16 33.5	60 33.3	0.60	60 39.8	+0.39	9 46.8	2.54	11.5
18	16 34.3	16 33.9	60 42.6	+0.06	60 41.3	-0.28	10 48.3	2.54	12.5
19	16 32.5	16 29.9	60 35.9	-0.63	60 26.3	0.96	11 49.0	2.48	13.5
20	16 26.2	16 21.5	60 12.8	1.28	59 55.8	1.56	12 47.5	2.37	14.5
21	16 16.0	16 9.8	59 35.6	1.80	59 12.8	1.99	13 43.0	2.24	15.5
22	16 03.0	15 55.9	58 47.9	2.14	58 21.7	2.23	14 35.1	2.11	16.5
23	15 48.5	15 41.1	57 54.6	2.27	57 27.3	2.26	15 24.4	2.01	17.5
24	15 33.8	15 26.7	57 0.4	2.21	56 34.4	2.12	16 11.5	1.93	18.5
25	15 20.0	15 13.7	56 9.7	1.99	55 46.7	1.83	16 57.2	1.89	19.5
26	15 8.0	15 2.9	55 25.7	1.65	55 7.0	1.46	17 42.2	1.87	20.5
27	14 58.5	14 54.7	54 50.7	1.26	54 36.9	1.04	18 27.1	1.88	21.5
28	14 51.6	14 49.3	54 25.7	0.83	54 17.0	0.61	19 12.4	1.90	22.5
29	14 47.6	14 46.7	54 10.9	-0.40	54 7.4	-0.20	19 58.5	1.94	23.5
30	14 46.4	14 46.7	54 6.2	+0.00	54 7.4	+0.19	20 45.4	1.97	24.5
31	14 47.6	14 49.0	54 10.8	0.37	54 16.2	0.53	21 33.1	2.00	25.5
32	14 51.0	14 53.4	54 23.4	+0.67	54 32.2	+0.80	22 21.4	2.01	26.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	^h 15 ^m 20 ^s 15.33	1.9876	S. 14° 10' 27.1"	6.100	0	^h 16 ^m 57 ^s 27.59	2.0022	S. 17° 44' 15.0"	2.000
1	15 22 14.63	1.9891	14 16 31.2	6.047	1	16 59 31.37	2.0036	17 46 52.6	2.006
2	15 24 14.02	1.9907	14 22 31.5	6.974	2	17 1 35.23	2.0050	17 49 25.4	2.006
3	15 26 13.51	1.9922	14 28 28.1	6.911	3	17 3 39.17	2.0064	17 51 53.3	2.026
4	15 28 13.09	1.9937	14 34 20.9	6.847	4	17 5 43.90	2.0078	17 54 16.4	2.044
5	15 30 12.75	1.9952	14 40 9.8	6.783	5	17 7 47.31	2.0092	17 56 34.6	2.063
6	15 32 12.51	1.9967	14 45 54.9	6.719	6	17 9 51.50	2.0106	17 58 48.0	2.102
7	15 34 12.35	1.9982	14 51 36.1	6.654	7	17 11 55.77	2.0119	18 0 56.5	2.100
8	15 36 12.29	1.9997	14 57 13.4	6.589	8	17 14 0.12	2.0131	18 3 0.1	2.018
9	15 38 12.31	2.0013	15 2 46.8	6.523	9	17 16 4.54	2.0143	18 4 58.8	1.996
10	15 40 12.44	2.0028	15 8 16.2	6.457	10	17 18 9.02	2.0156	18 6 52.5	1.864
11	15 42 12.65	2.0043	15 13 41.6	6.390	11	17 20 13.62	2.0169	18 8 41.3	1.773
12	15 44 12.96	2.0059	15 19 3.0	6.324	12	17 22 18.27	2.0181	18 10 25.2	1.689
13	15 46 13.36	2.0075	15 24 20.4	6.256	13	17 24 22.99	2.0193	18 12 4.0	1.606
14	15 48 13.86	2.0091	15 29 33.8	6.189	14	17 26 27.79	2.0205	18 13 37.9	1.523
15	15 50 14.45	2.0107	15 34 43.1	6.121	15	17 28 32.65	2.0218	18 15 6.8	1.439
16	15 52 15.14	2.0122	15 39 48.3	6.052	16	17 30 37.58	2.0227	18 16 30.7	1.356
17	15 54 15.92	2.0138	15 44 49.4	5.983	17	17 32 42.58	2.0239	18 17 49.5	1.273
18	15 56 16.80	2.0155	15 49 46.3	5.914	18	17 34 47.65	2.0250	18 19 3.3	1.188
19	15 58 17.78	2.0171	15 54 39.0	5.844	19	17 36 52.78	2.0261	18 20 12.1	1.104
20	16 0 18.85	2.0187	15 59 27.6	5.774	20	17 38 57.98	2.0272	18 21 15.8	1.019
21	16 2 20.02	2.0203	16 4 12.0	5.704	21	17 41 3.24	2.0282	18 22 14.4	0.936
22	16 4 21.29	2.0219	16 8 52.1	5.633	22	17 43 8.56	2.0291	18 23 7.9	0.850
23	16 6 22.65	2.0235	S. 16° 13' 27.9"	5.562	23	17 45 13.93	2.0301	S. 18° 23' 56.4"	0.766
WEDNESDAY 2.					FRIDAY 4.				
0	16 8 24.11	2.0252	S. 16° 17' 59.5"	5.490	0	17 47 19.37	2.0311	S. 18° 24' 39.7"	0.680
1	16 10 25.67	2.0267	16 22 26.7	5.418	1	17 49 24.86	2.0320	18 25 18.0	0.596
2	16 12 27.32	2.0283	16 26 49.6	5.346	2	17 51 30.41	2.0329	18 25 51.1	0.509
3	16 14 29.07	2.0300	16 31 8.2	5.273	3	17 53 36.01	2.0337	18 26 19.1	0.424
4	16 16 30.92	2.0316	16 35 22.4	5.200	4	17 55 41.66	2.0346	18 26 42.0	0.336
5	16 18 32.86	2.0332	16 39 32.2	5.126	5	17 57 47.36	2.0354	18 26 59.6	0.243
6	16 20 34.90	2.0347	16 43 37.6	5.052	6	17 59 53.11	2.0362	18 27 12.2	0.167
7	16 22 37.03	2.0364	16 47 38.5	4.978	7	18 1 58.91	2.0370	18 27 19.6	0.091
8	16 24 39.27	2.0380	16 51 35.0	4.904	8	18 4 4.75	2.0377	18 27 21.9	0.006
9	16 26 41.59	2.0396	16 55 27.0	4.829	9	18 6 10.64	2.0385	18 27 19.0	0.091
10	16 28 44.01	2.0412	16 59 14.5	4.754	10	18 8 16.57	2.0392	18 27 10.9	0.177
11	16 30 46.53	2.0427	17 2 57.4	4.678	11	18 10 22.54	2.0399	18 26 57.7	0.263
12	16 32 49.14	2.0443	17 6 35.8	4.603	12	18 12 28.55	2.1006	18 26 39.3	0.349
13	16 34 51.84	2.0458	17 10 9.6	4.526	13	18 14 34.60	2.1011	18 26 15.7	0.436
14	16 36 54.64	2.0474	17 13 39.0	4.449	14	18 16 40.68	2.1017	18 25 46.9	0.523
15	16 38 57.53	2.0489	17 17 3.6	4.373	15	18 18 46.80	2.1022	18 25 13.0	0.609
16	16 41 0.51	2.0504	17 20 23.6	4.296	16	18 20 52.95	2.1027	18 24 33.9	0.696
17	16 43 3.58	2.0520	17 23 39.0	4.217	17	18 22 59.13	2.1032	18 23 49.5	0.782
18	16 45 6.75	2.0535	17 26 49.7	4.139	18	18 25 5.34	2.1037	18 23 0.0	0.869
19	16 47 10.00	2.0549	17 29 55.7	4.061	19	18 27 11.58	2.1042	18 22 5.3	0.956
20	16 49 13.34	2.0564	17 32 57.0	3.983	20	18 29 17.84	2.1046	18 21 5.4	1.042
21	16 51 16.77	2.0579	17 35 53.6	3.904	21	18 31 24.13	2.1050	18 20 0.3	1.128
22	16 53 20.29	2.0594	17 38 45.5	3.825	22	18 33 30.44	2.1053	18 18 50.0	1.216
23	16 55 23.90	2.0608	17 41 32.6	3.746	23	18 35 36.77	2.1057	18 17 34.5	1.301
24	16 57 27.59	2.0623	S. 17° 44' 15.0"	3.668	24	18 37 43.12	2.1060	S. 18° 16' 13.8"	1.388

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	18 37 43.12	2.1000	S. 18° 16' 13.8"	1.500	0	20 18 40.73	2.0024	S. 15° 32' 11.1"	4.305
1	18 39 49.49	2.1000	18 14 47.9	1.474	1	20 20 46.26	2.0017	15 26 46.9	4.441
2	18 41 55.87	2.1000	18 13 16.8	1.561	2	20 22 51.74	2.0010	15 21 18.1	4.517
3	18 44 2.27	2.1007	18 11 40.6	1.647	3	20 24 57.18	2.0003	15 15 44.8	4.592
4	18 46 8.68	2.1000	18 9 59.2	1.734	4	20 27 2.58	2.0006	15 10 7.0	4.667
5	18 48 15.10	2.1071	18 8 12.6	1.820	5	20 29 7.93	2.0008	15 4 24.7	4.743
6	18 50 21.53	2.1073	18 6 20.8	1.906	6	20 31 13.24	2.0001	14 58 38.0	4.816
7	18 52 27.97	2.1073	18 4 23.8	1.992	7	20 33 18.50	2.0073	14 52 46.8	4.890
8	18 54 34.41	2.1074	18 2 21.7	2.078	8	20 35 23.71	2.0066	14 46 51.9	4.963
9	18 56 40.86	2.1073	18 0 14.4	2.164	9	20 37 28.88	2.0067	14 40 51.2	5.036
10	18 58 47.31	2.1070	17 58 2.0	2.250	10	20 39 34.00	2.0060	14 34 46.9	5.109
11	19 0 53.77	2.1076	17 55 44.4	2.336	11	20 41 39.08	2.0043	14 28 38.2	5.181
12	19 3 0.22	2.1073	17 53 21.6	2.422	12	20 43 44.11	2.0034	14 22 25.2	5.253
13	19 5 6.67	2.1073	17 50 53.7	2.507	13	20 45 49.09	2.0026	14 16 7.9	5.323
14	19 7 13.12	2.1074	17 48 20.7	2.593	14	20 47 54.02	2.0019	14 9 46.4	5.394
15	19 9 19.56	2.1073	17 45 42.6	2.678	15	20 49 58.91	2.0011	14 3 20.7	5.464
16	19 11 26.00	2.1073	17 42 59.3	2.763	16	20 52 3.76	2.0003	13 56 50.7	5.534
17	19 13 32.43	2.1071	17 40 11.0	2.848	17	20 54 8.55	2.0796	13 50 16.6	5.603
18	19 15 38.85	2.1069	17 37 17.6	2.933	18	20 56 13.30	2.0787	13 43 38.3	5.673
19	19 17 45.26	2.1067	17 34 19.1	3.018	19	20 58 18.00	2.0779	13 36 55.9	5.741
20	19 19 51.65	2.1064	17 31 15.5	3.103	20	21 0 22.65	2.0773	13 30 9.4	5.808
21	19 21 58.03	2.1062	17 28 6.8	3.188	21	21 2 27.26	2.0764	13 23 18.9	5.876
22	19 24 4.40	2.1060	17 24 53.1	3.270	22	21 4 31.82	2.0756	13 16 24.3	5.943
23	19 26 10.76	2.1057	S. 17° 21' 34.3"	3.354	23	21 6 36.33	2.0748	S. 13° 9' 25.7"	6.000
SUNDAY 6.					TUESDAY 8.				
0	19 28 17.09	2.1054	S. 17° 18' 10.5"	3.438	0	21 8 40.80	2.0741	S. 13° 2' 23.9"	7.075
1	19 30 23.41	2.1051	17 14 41.7	3.522	1	21 10 45.22	2.0733	12 55 16.7	7.140
2	19 32 29.70	2.1047	17 11 7.9	3.606	2	21 12 49.60	2.0726	12 48 6.3	7.206
3	19 34 35.97	2.1043	17 7 29.1	3.689	3	21 14 53.93	2.0718	12 40 52.1	7.270
4	19 36 42.22	2.1040	17 3 45.3	3.771	4	21 16 58.22	2.0711	12 33 34.0	7.334
5	19 38 48.45	2.1036	16 59 56.6	3.853	5	21 19 2.46	2.0703	12 26 12.1	7.397
6	19 40 54.65	2.1033	16 56 3.0	3.936	6	21 21 6.66	2.0696	12 18 46.4	7.460
7	19 43 0.82	2.1027	16 52 4.4	4.017	7	21 23 10.82	2.0690	12 11 17.0	7.521
8	19 45 6.97	2.1023	16 48 0.9	4.099	8	21 25 14.94	2.0683	12 3 43.8	7.583
9	19 47 13.09	2.1017	16 43 52.5	4.181	9	21 27 19.01	2.0675	11 56 7.0	7.644
10	19 49 19.18	2.1013	16 39 39.2	4.262	10	21 29 23.04	2.0668	11 48 26.5	7.706
11	19 51 25.23	2.1007	16 35 21.0	4.343	11	21 31 27.04	2.0660	11 40 42.4	7.766
12	19 53 31.26	2.1003	16 30 58.0	4.423	12	21 33 30.99	2.0653	11 32 54.7	7.824
13	19 55 37.25	2.0996	16 26 30.2	4.504	13	21 35 34.90	2.0646	11 25 3.5	7.883
14	19 57 43.21	2.0990	16 21 57.4	4.584	14	21 37 38.78	2.0638	11 17 8.7	7.943
15	19 59 49.13	2.0984	16 17 20.0	4.663	15	21 39 42.62	2.0637	11 9 10.5	7.999
16	20 1 55.02	2.0978	16 12 37.8	4.743	16	21 41 46.43	2.0633	11 1 8.8	8.067
17	20 4 0.87	2.0973	16 7 50.9	4.823	17	21 43 50.20	2.0626	10 53 3.7	8.114
18	20 6 6.69	2.0966	16 2 59.2	4.900	18	21 45 53.93	2.0620	10 44 55.2	8.170
19	20 8 12.46	2.0960	15 58 2.8	4.978	19	21 47 57.64	2.0615	10 36 43.3	8.225
20	20 10 18.20	2.0953	15 53 1.8	5.057	20	21 50 1.31	2.0609	10 28 28.1	8.280
21	20 12 23.89	2.0946	15 47 56.1	5.134	21	21 52 4.95	2.0604	10 20 9.7	8.334
22	20 14 29.55	2.0939	15 42 45.7	5.213	22	21 54 8.56	2.0600	10 11 48.0	8.388
23	20 16 35.16	2.0932	15 37 30.7	5.289	23	21 56 12.14	2.0595	10 3 23.1	8.441
24	20 18 40.73	2.0924	S. 15° 32' 11.1"	5.365	24	21 58 15.70	2.0591	S. 9° 54' 55.0"	8.494

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	^h 21 ^m 58 ^s 15.70	2.0891	S. 9° 54' 55.0	8.494	0	^h 23 ^m 37 ^s 7.77	2.0786	S. 2° 18' 46.6	10.381
1	22 0 19.23	2.0897	9 46 23.8	8.446	1	23 39 12.23	2.0780	2 8 30.9	10.370
2	22 2 22.74	2.0893	9 37 49.5	8.597	2	23 41 16.77	2.0763	1 58 14.1	10.359
3	22 4 26.22	2.0878	9 29 12.1	8.649	3	23 43 21.39	2.0777	1 47 56.2	10.307
4	22 6 29.68	2.0876	9 20 31.7	8.698	4	23 45 26.09	2.0790	1 37 37.3	10.323
5	22 8 33.12	2.0873	9 11 48.3	8.748	5	23 47 30.87	2.0805	1 27 17.4	10.340
6	22 10 36.54	2.0869	9 3 2.0	8.797	6	23 49 35.75	2.0821	1 16 56.6	10.356
7	22 12 39.95	2.0867	8 54 12.7	8.846	7	23 51 40.72	2.0835	1 6 34.8	10.370
8	22 14 43.34	2.0864	8 45 20.6	8.894	8	23 53 45.77	2.0850	0 56 12.2	10.383
9	22 16 46.72	2.0862	8 36 25.6	8.940	9	23 55 50.92	2.0867	0 45 48.8	10.396
10	22 18 50.08	2.0860	8 27 27.8	8.985	10	23 57 56.17	2.0883	0 35 24.6	10.408
11	22 20 53.44	2.0858	8 18 27.3	9.033	11	0 0 1.52	2.0900	0 24 59.8	10.420
12	22 22 56.78	2.0857	8 9 24.0	9.077	12	0 2 6.97	2.0917	0 14 34.3	10.431
13	22 25 0.12	2.0855	8 0 18.0	9.123	13	0 4 12.53	2.0935	S. 0 4 8.1	10.440
14	22 27 3.45	2.0855	7 51 9.4	9.166	14	0 6 18.20	2.0954	N. 0 6 18.6	10.449
15	22 29 6.78	2.0854	7 41 58.2	9.209	15	0 8 23.98	2.0973	0 16 45.8	10.458
16	22 31 10.10	2.0853	7 32 44.4	9.251	16	0 10 29.87	2.0993	0 27 13.5	10.466
17	22 33 13.42	2.0854	7 23 28.0	9.293	17	0 12 35.89	2.1013	0 37 41.6	10.471
18	22 35 16.75	2.0854	7 14 9.2	9.334	18	0 14 42.02	2.1032	0 48 10.1	10.477
19	22 37 20.09	2.0855	7 4 47.9	9.376	19	0 16 48.28	2.1054	0 58 38.9	10.483
20	22 39 23.42	2.0855	6 55 24.2	9.418	20	0 18 54.67	2.1076	1 9 7.9	10.486
21	22 41 26.76	2.0857	6 45 58.1	9.454	21	0 21 1.19	2.1098	1 19 37.1	10.489
22	22 43 30.11	2.0859	6 36 29.7	9.493	22	0 23 7.84	2.1120	1 30 6.5	10.491
23	22 45 33.47	2.0860	S. 6 26 59.0	9.531	23	0 25 14.63	2.1143	N. 1 40 36.0	10.493
THURSDAY 10.					SATURDAY 12.				
0	22 47 36.85	2.0864	S. 6 17 26.0	9.569	0	0 27 21.55	2.1166	N. 1 51 5.5	10.496
1	22 49 40.23	2.0866	6 7 50.8	9.604	1	0 29 28.62	2.1190	2 1 35.1	10.493
2	22 51 43.64	2.0870	5 58 13.5	9.640	2	0 31 35.83	2.1214	2 12 4.6	10.491
3	22 53 47.07	2.0874	5 48 34.0	9.676	3	0 33 43.19	2.1239	2 22 34.0	10.489
4	22 55 50.53	2.0879	5 38 52.4	9.710	4	0 35 50.70	2.1264	2 33 3.2	10.486
5	22 57 54.02	2.0883	5 29 8.8	9.744	5	0 37 58.36	2.1290	2 43 32.2	10.483
6	22 59 57.52	2.0886	5 19 23.1	9.777	6	0 40 6.18	2.1317	2 54 1.0	10.477
7	23 2 1.04	2.0890	5 9 35.5	9.809	7	0 42 14.16	2.1343	3 4 29.4	10.471
8	23 4 4.60	2.0895	4 59 46.0	9.841	8	0 44 22.30	2.1371	3 14 57.5	10.464
9	23 6 8.19	2.0899	4 49 54.6	9.873	9	0 46 30.61	2.1398	3 25 25.2	10.457
10	23 8 11.82	2.0903	4 40 1.4	9.905	10	0 48 39.08	2.1427	3 35 52.4	10.448
11	23 10 15.49	2.0910	4 30 6.3	9.937	11	0 50 47.73	2.1456	3 46 19.0	10.439
12	23 12 19.20	2.0923	4 20 9.5	9.961	12	0 52 56.55	2.1485	3 56 45.0	10.428
13	23 14 22.95	2.0929	4 10 11.0	9.989	13	0 55 5.55	2.1514	4 7 10.4	10.417
14	23 16 26.75	2.0937	4 0 10.8	10.017	14	0 57 14.72	2.1544	4 17 35.1	10.406
15	23 18 30.59	2.0945	3 50 9.0	10.044	15	0 59 24.08	2.1576	4 27 59.0	10.393
16	23 20 34.49	2.0954	3 40 5.6	10.070	16	1 1 33.63	2.1607	4 38 22.1	10.377
17	23 22 38.44	2.0962	3 30 0.6	10.095	17	1 3 43.36	2.1638	4 48 44.3	10.363
18	23 24 42.44	2.0973	3 19 54.2	10.120	18	1 5 53.28	2.1670	4 59 5.5	10.346
19	23 26 46.50	2.0983	3 9 46.3	10.148	19	1 8 3.40	2.1703	5 9 25.8	10.329
20	23 28 50.62	2.0992	2 59 37.0	10.166	20	1 10 13.72	2.1736	5 19 45.0	10.311
21	23 30 54.81	2.0703	2 49 26.4	10.186	21	1 12 24.23	2.1769	5 30 3.1	10.293
22	23 32 59.06	2.0714	2 39 14.4	10.210	22	1 14 34.95	2.1803	5 40 20.0	10.271
23	23 35 3.38	2.0726	2 29 1.1	10.231	23	1 16 45.87	2.1837	5 50 35.6	10.250
24	23 37 7.77	2.0738	S. 2 18 46.6	10.251	24	1 18 57.00	2.1872	N. 6 0 50.0	10.228

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	1 18 57.00	2.1873	N. 6° 0' 50.0	10.328	0	3 8 40.99	2.3987	N. 13° 25' 41.1	7.808
1	1 21 8.34	2.1907	6 11 3.0	10.306	1	3 11 4.87	2.4008	13 33 30.7	7.798
2	1 23 19.89	2.1943	6 21 14.6	10.181	2	3 13 29.05	2.4038	13 41 15.6	7.708
3	1 25 31.66	2.1980	6 31 24.7	10.166	3	3 15 53.51	2.4100	13 48 55.7	7.628
4	1 27 43.65	2.2017	6 41 33.3	10.130	4	3 18 18.25	2.4148	13 56 30.9	7.646
5	1 29 55.86	2.2053	6 51 40.3	10.102	5	3 20 43.29	2.4196	14 4 1.2	7.603
6	1 32 8.29	2.2091	7 1 45.6	10.074	6	3 23 8.61	2.4243	14 11 26.5	7.579
7	1 34 20.95	2.2129	7 11 49.2	10.044	7	3 25 34.21	2.4291	14 18 46.7	7.594
8	1 36 33.84	2.2167	7 21 51.0	10.014	8	3 28 0.10	2.4338	14 26 1.7	7.507
9	1 38 46.96	2.2206	7 31 50.9	9.983	9	3 30 26.27	2.4385	14 33 11.5	7.130
10	1 41 0.32	2.2246	7 41 48.9	9.950	10	3 32 52.72	2.4432	14 40 16.0	7.031
11	1 43 13.91	2.2286	7 51 44.9	9.916	11	3 35 19.46	2.4480	14 47 15.2	6.940
12	1 45 27.74	2.2325	8 1 38.9	9.882	12	3 37 46.48	2.4527	14 54 8.9	6.849
13	1 47 41.81	2.2366	8 11 30.8	9.846	13	3 40 13.78	2.4573	15 0 57.1	6.766
14	1 49 56.13	2.2407	8 21 20.5	9.809	14	3 42 41.35	2.4618	15 7 39.7	6.683
15	1 52 10.69	2.2448	8 31 7.9	9.771	15	3 45 9.20	2.4664	15 14 16.6	6.598
16	1 54 25.50	2.2489	8 40 53.0	9.732	16	3 47 37.32	2.4710	15 20 47.8	6.473
17	1 56 40.56	2.2531	8 50 35.7	9.691	17	3 50 5.72	2.4756	15 27 13.2	6.376
18	1 58 55.87	2.2573	9 0 16.0	9.650	18	3 52 34.39	2.4800	15 33 32.8	6.276
19	2 1 11.44	2.2616	9 9 53.7	9.608	19	3 55 3.32	2.4844	15 39 46.4	6.177
20	2 3 27.26	2.2659	9 19 28.9	9.564	20	3 57 32.52	2.4889	15 45 54.0	6.077
21	2 5 43.34	2.2703	9 29 1.4	9.519	21	4 0 1.99	2.4933	15 51 55.6	5.978
22	2 7 59.68	2.2746	9 38 31.2	9.473	22	4 2 31.72	2.4977	15 57 51.0	5.873
23	2 10 16.29	2.2790	N. 9 47 58.2	9.426	23	4 5 1.71	2.5019	N. 16 3 40.3	5.769
MONDAY 14.					WEDNESDAY 16.				
0	2 12 33.16	2.2834	N. 9 57 22.3	9.378	0	4 7 31.95	2.5063	N. 16 9 23.3	5.664
1	2 14 50.29	2.2878	10 6 43.5	9.339	1	4 10 2.45	2.5104	16 15 0.0	5.568
2	2 17 7.70	2.2923	10 16 1.7	9.278	2	4 12 33.20	2.5146	16 20 30.2	5.461
3	2 19 25.37	2.2968	10 25 16.9	9.227	3	4 15 4.20	2.5187	16 25 54.0	5.343
4	2 21 43.31	2.3013	10 34 28.9	9.174	4	4 17 35.44	2.5227	16 31 11.3	5.233
5	2 24 1.53	2.3059	10 43 37.7	9.120	5	4 20 6.93	2.5267	16 36 22.0	5.122
6	2 26 20.02	2.3105	10 52 43.3	9.065	6	4 22 38.65	2.5307	16 41 26.1	5.013
7	2 28 38.79	2.3151	11 1 45.5	9.009	7	4 25 10.61	2.5346	16 46 23.5	4.900
8	2 30 57.83	2.3197	11 10 44.3	8.950	8	4 27 42.80	2.5384	16 51 14.1	4.787
9	2 33 17.15	2.3243	11 19 39.6	8.892	9	4 30 15.22	2.5423	16 55 57.9	4.673
10	2 35 36.75	2.3290	11 28 31.3	8.832	10	4 32 47.86	2.5468	17 0 34.8	4.556
11	2 37 56.63	2.3337	11 37 19.4	8.771	11	4 35 20.72	2.5498	17 5 4.8	4.442
12	2 40 16.79	2.3384	11 46 3.8	8.709	12	4 37 53.80	2.5531	17 9 27.8	4.326
13	2 42 37.23	2.3431	11 54 44.4	8.645	13	4 40 27.09	2.5568	17 13 43.8	4.207
14	2 44 57.96	2.3479	12 3 21.2	8.580	14	4 43 0.59	2.5600	17 17 52.7	4.088
15	2 47 18.98	2.3527	12 11 54.0	8.514	15	4 45 34.29	2.5633	17 21 54.4	3.969
16	2 49 40.28	2.3574	12 20 22.8	8.447	16	4 48 8.19	2.5667	17 25 48.9	3.848
17	2 52 1.86	2.3621	12 28 47.6	8.379	17	4 50 42.29	2.5699	17 29 36.2	3.727
18	2 54 23.73	2.3669	12 37 8.3	8.309	18	4 53 16.58	2.5730	17 33 16.2	3.606
19	2 56 45.89	2.3717	12 45 24.7	8.238	19	4 55 51.05	2.5760	17 36 48.9	3.483
20	2 59 8.33	2.3764	12 53 36.8	8.166	20	4 58 25.70	2.5790	17 40 14.2	3.359
21	3 1 31.06	2.3813	13 1 44.6	8.093	21	5 1 0.52	2.5818	17 43 32.0	3.236
22	3 3 54.08	2.3861	13 9 48.0	8.019	22	5 3 35.52	2.5846	17 46 42.4	3.110
23	3 6 17.39	2.3909	13 17 46.8	7.943	23	5 6 10.68	2.5873	17 49 45.2	2.985
24	3 8 40.99	2.3957	N. 13 25 41.1	7.866	24	5 8 46.00	2.5900	N. 17 52 40.5	2.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	5 8 46.00	2.6000	N.17 52 40.5	2.6000	0	7 14 9.61	2.6000	N.17 38 0.0	2.6000
1	5 11 21.48	2.6000	17 55 28.2	2.731	1	7 16 45.15	2.6010	17 34 28.5	2.6008
2	5 13 57.10	2.6040	17 58 8.2	2.608	2	7 19 20.53	2.6024	17 30 49.5	2.712
3	5 16 32.86	2.6073	18 0 40.6	2.478	3	7 21 55.76	2.6037	17 27 3.0	2.636
4	5 19 8.77	2.6006	18 3 5.2	2.246	4	7 24 30.82	2.6050	17 23 9.1	2.900
5	5 21 44.80	2.6016	18 5 22.1	2.217	5	7 27 5.71	2.6060	17 19 7.9	4.061
6	5 24 20.96	2.6087	18 7 31.2	2.687	6	7 29 40.42	2.6780	17 14 59.4	4.393
7	5 26 57.24	2.6087	18 9 32.6	1.987	7	7 32 14.94	2.6788	17 10 43.6	4.233
8	5 29 33.64	2.6076	18 11 26.1	1.995	8	7 34 49.28	2.6797	17 6 20.7	4.443
9	5 32 10.14	2.6093	18 13 11.8	1.695	9	7 37 23.43	2.6875	17 1 50.6	4.861
10	5 34 46.76	2.6100	18 14 49.6	1.544	10	7 39 57.38	2.6842	16 57 13.4	4.679
11	5 37 23.45	2.6104	18 16 19.5	1.423	11	7 42 31.13	2.6808	16 52 29.2	4.786
12	5 40 0.24	2.6126	18 17 41.4	1.299	12	7 45 4.68	2.6873	16 47 38.0	4.912
13	5 42 37.11	2.6149	18 18 55.4	1.166	13	7 47 38.01	2.6887	16 42 39.8	5.037
14	5 45 14.06	2.6164	18 20 1.4	1.033	14	7 50 11.13	2.6891	16 37 34.8	5.141
15	5 47 51.09	2.6176	18 20 59.4	0.900	15	7 52 44.02	2.6863	16 32 22.9	5.264
16	5 50 28.18	2.6166	18 21 49.4	0.766	16	7 55 16.69	2.6836	16 27 4.3	5.386
17	5 53 5.32	2.6165	18 22 31.4	0.632	17	7 57 49.13	2.6807	16 21 39.0	5.476
18	5 55 42.52	2.6203	18 23 5.3	0.499	18	8 0 21.34	2.6848	16 16 7.1	5.565
19	5 58 19.76	2.6210	18 23 31.2	0.365	19	8 2 53.31	2.6809	16 10 28.7	5.684
20	6 0 57.04	2.6216	18 23 49.1	0.230	20	8 5 25.04	2.6807	16 4 43.8	5.803
21	6 3 34.35	2.6201	18 23 58.9	0.095	21	8 7 56.52	2.6827	15 58 52.4	5.900
22	6 6 11.69	2.6204	18 24 0.6	0.028	22	8 10 27.76	2.6186	15 52 54.7	6.014
23	6 8 49.04	2.6226	N.18 23 54.2	0.172	23	8 12 58.74	2.6143	N.15 46 59.7	6.119
FRIDAY 18.					SUNDAY 20.				
0	6 11 26.41	2.6220	N.18 23 59.8	0.207	0	8 15 28.46	2.6220	N.15 46 46.4	6.223
1	6 14 3.78	2.6220	18 23 17.3	0.442	1	8 17 59.92	2.6224	15 34 24.0	6.324
2	6 16 41.15	2.6227	18 22 46.8	0.576	2	8 20 30.12	2.6211	15 28 1.6	6.424
3	6 19 18.51	2.6236	18 22 8.2	0.711	3	8 23 0.05	2.6207	15 21 33.1	6.524
4	6 21 55.86	2.6223	18 21 21.5	0.845	4	8 25 29.72	2.6203	15 14 58.7	6.622
5	6 24 33.19	2.6219	18 20 26.8	0.979	5	8 27 59.11	2.6178	15 8 18.4	6.719
6	6 27 10.49	2.6213	18 19 24.0	1.113	6	8 30 28.22	2.6228	15 1 32.4	6.816
7	6 29 47.75	2.6207	18 18 13.2	1.247	7	8 32 57.06	2.6783	14 54 40.7	6.909
8	6 32 24.97	2.6200	18 16 54.4	1.380	8	8 35 25.62	2.6787	14 47 43.3	7.008
9	6 35 2.15	2.6192	18 15 27.6	1.513	9	8 37 53.90	2.6808	14 40 40.4	7.096
10	6 37 39.27	2.6181	18 13 52.8	1.646	10	8 40 21.89	2.6841	14 33 32.0	7.186
11	6 40 16.32	2.6171	18 12 10.0	1.779	11	8 42 49.59	2.6869	14 26 18.2	7.275
12	6 42 53.32	2.6160	18 10 19.2	1.911	12	8 45 17.00	2.6844	14 18 59.0	7.363
13	6 45 30.24	2.6146	18 8 20.6	2.043	13	8 47 44.12	2.6826	14 11 34.6	7.450
14	6 48 7.07	2.6133	18 6 14.0	2.176	14	8 50 10.95	2.6847	14 4 5.0	7.538
15	6 50 43.82	2.6117	18 3 59.5	2.308	15	8 52 37.48	2.6807	13 56 30.3	7.620
16	6 53 20.48	2.6101	18 1 37.2	2.437	16	8 55 3.71	2.6847	13 48 50.6	7.708
17	6 55 57.03	2.6093	17 59 7.1	2.567	17	8 57 29.65	2.6897	13 41 6.0	7.794
18	6 58 33.47	2.6085	17 56 29.2	2.696	18	8 59 55.28	2.6847	13 33 16.5	7.885
19	7 1 9.81	2.6047	17 53 43.5	2.826	19	9 2 20.62	2.6197	13 25 22.2	7.964
20	7 3 46.04	2.6027	17 50 50.1	2.954	20	9 4 45.65	2.6147	13 17 23.2	8.051
21	7 6 22.14	2.6006	17 47 49.0	3.082	21	9 7 10.38	2.6098	13 9 19.6	8.096
22	7 8 58.10	2.6093	17 44 40.3	3.209	22	9 9 34.80	2.6048	13 1 11.5	8.173
23	7 11 33.92	2.6080	17 41 23.9	3.336	23	9 11 58.92	2.6004	12 52 58.9	8.246
24	7 14 9.61	2.6066	N.17 38 -0.0	3.463	24	9 14 22.73	2.6042	N.12 44 42.0	8.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	D.M. for 1 m.	Declination.	D.M. for 1 m.	Hour.	Right Ascension.	D.M. for 1 m.	Declination.	D.M. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	9 14 22.73	2.3082	N. 12 44 42.0	6.319	0	11 3 31.57	2.1017	N. 5 6 55.5	10.300
1	9 16 46.23	2.3082	12 36 20.7	6.300	1	11 5 41.15	2.1076	4 56 38.3	10.302
2	9 19 9.43	2.3080	12 27 55.9	6.450	2	11 7 50.48	2.1084	4 46 20.5	10.303
3	9 21 32.31	2.3708	12 19 25.6	6.828	3	11 9 59.56	2.1084	4 36 2.0	10.313
4	9 23 54.89	2.3707	12 10 51.9	6.805	4	11 12 8.41	2.1086	4 25 42.9	10.322
5	9 26 17.16	2.3080	12 2 14.2	6.800	5	11 14 17.02	2.1018	4 15 23.3	10.300
6	9 28 39.12	2.3084	11 53 32.7	6.724	6	11 16 25.89	2.1078	4 5 3.3	10.307
7	9 31 0.77	2.3082	11 44 47.3	6.767	7	11 18 33.52	2.1080	3 54 42.9	10.343
8	9 33 22.11	2.3081	11 35 58.2	6.840	8	11 20 41.43	2.1080	3 44 22.2	10.348
9	9 35 43.14	2.3470	11 27 5.4	6.909	9	11 22 49.10	2.1080	3 34 1.2	10.362
10	9 38 3.86	2.3468	11 18 9.1	6.908	10	11 24 56.55	2.1082	3 23 40.0	10.366
11	9 40 24.28	2.3771	11 9 9.3	6.926	11	11 27 3.78	2.1107	3 13 18.6	10.307
12	9 42 44.28	2.3235	11 0 6.0	6.992	12	11 29 10.79	2.1100	3 2 57.1	10.300
13	9 45 4.18	2.3270	10 50 59.4	6.137	13	11 31 17.58	2.1118	2 52 35.6	10.300
14	9 47 23.66	2.3232	10 41 49.6	6.190	14	11 33 24.15	2.1078	2 42 14.0	10.300
15	9 49 42.84	2.3172	10 32 36.6	6.343	15	11 35 30.52	2.1048	2 31 52.5	10.306
16	9 52 1.72	2.3191	10 23 30.5	6.294	16	11 37 36.67	2.1008	2 21 31.1	10.306
17	9 54 20.29	2.3080	10 14 1.4	6.344	17	11 39 42.62	2.0978	2 11 9.9	10.302
18	9 56 38.55	2.3010	10 4 39.3	6.392	18	11 41 48.37	2.0941	2 0 48.9	10.346
19	9 58 56.51	2.3080	9 55 14.3	6.439	19	11 43 53.92	2.0907	1 50 28.2	10.343
20	10 1 14.17	2.3017	9 45 46.6	6.489	20	11 45 59.25	2.0874	1 40 7.8	10.307
21	10 3 31.52	2.3087	9 36 16.1	6.580	21	11 48 4.40	2.0848	1 29 47.8	10.300
22	10 5 48.58	2.3017	9 26 43.0	6.673	22	11 50 9.36	2.0811	1 19 28.2	10.323
23	10 8 5.33	2.3707	N. 9 17 7.3	6.616	23	11 52 14.13	2.0780	N. 1 9 9.0	10.314
TUESDAY 22.					THURSDAY 24.				
0	10 10 21.79	2.3718	N. 9 7 29.1	6.666	0	11 54 18.72	2.0748	N. 0 58 50.4	10.306
1	10 12 37.95	2.3080	8 57 48.5	6.606	1	11 56 23.12	2.0719	0 48 32.4	10.306
2	10 14 53.81	2.3010	8 48 5.6	6.784	2	11 58 27.34	2.0680	0 38 15.0	10.304
3	10 17 9.38	2.3071	8 38 20.4	6.771	3	12 0 31.89	2.0680	0 27 58.2	10.373
4	10 19 24.66	2.3233	8 28 33.1	6.807	4	12 2 35.26	2.0681	0 17 42.2	10.351
5	10 21 39.64	2.3474	8 18 43.6	6.841	5	12 4 38.96	2.0602	N. 0 7 26.9	10.348
6	10 23 54.34	2.3430	8 8 52.1	6.875	6	12 6 42.49	2.0574	S. 0 2 47.5	10.384
7	10 26 8.75	2.3270	7 58 58.6	6.907	7	12 8 45.85	2.0547	0 13 1.1	10.319
8	10 28 22.87	2.3230	7 49 3.2	6.938	8	12 10 49.05	2.0520	0 23 13.8	10.304
9	10 30 36.71	2.3230	7 39 6.0	6.908	9	12 12 52.09	2.0484	0 33 25.6	10.188
10	10 32 50.27	2.3230	7 29 7.0	6.907	10	12 14 54.98	2.0468	0 43 36.4	10.171
11	10 35 3.54	2.3180	7 19 6.4	10.084	11	12 16 57.71	2.0443	0 53 46.1	10.168
12	10 37 16.54	2.3148	7 9 4.1	10.061	12	12 19 0.29	2.0417	1 3 54.8	10.185
13	10 39 29.26	2.3087	6 59 0.3	10.076	13	12 21 2.72	2.0390	1 14 2.3	10.116
14	10 41 41.71	2.3088	6 48 55.0	10.100	14	12 23 5.01	2.0369	1 24 8.7	10.006
15	10 43 53.88	2.3007	6 38 48.3	10.123	15	12 25 7.15	2.0346	1 34 13.9	10.076
16	10 46 5.79	2.1993	6 28 40.2	10.146	16	12 27 9.16	2.0328	1 44 17.8	10.006
17	10 48 17.42	2.1917	6 18 30.9	10.166	17	12 29 11.03	2.0300	1 54 20.5	10.008
18	10 50 28.79	2.1878	6 8 20.4	10.186	18	12 31 12.76	2.0278	2 4 21.8	10.011
19	10 52 39.90	2.1800	5 58 8.7	10.204	19	12 33 14.37	2.0257	2 14 21.8	9.988
20	10 54 50.75	2.1707	5 47 56.0	10.221	20	12 35 15.84	2.0236	2 24 20.3	9.904
21	10 57 1.34	2.1748	5 37 42.2	10.287	21	12 37 17.19	2.0216	2 34 17.4	9.900
22	10 59 11.67	2.1700	5 27 27.5	10.353	22	12 39 18.42	2.0190	2 44 13.0	9.914
23	11 1 21.74	2.1686	5 17 11.9	10.367	23	12 41 19.53	2.0178	2 54 7.1	9.886
24	11 3 31.57	2.1617	N. 5 6 55.5	10.380	24	12 43 20.53	2.0107	S. 3 3 59.7	9.892

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	12 43 20.53	2.0187	S. 3 3 59.7	9.892	0	14 18 45.13	1.9781	S. 10 16 24.0	7.991
1	12 45 21.41	2.0187	3 13 50.6	9.895	1	14 20 43.70	1.9782	10 24 20.1	7.910
2	12 47 22.18	2.0119	3 23 39.9	9.898	2	14 22 42.28	1.9784	10 32 13.1	7.886
3	12 49 22.84	2.0108	3 33 27.5	9.790	3	14 24 40.87	1.9785	10 40 3.1	7.866
4	12 51 23.40	2.0080	3 43 13.4	9.781	4	14 26 39.47	1.9788	10 47 49.9	7.783
5	12 53 23.86	2.0060	3 52 57.6	9.731	5	14 28 38.09	1.9779	10 55 33.5	7.701
6	12 55 24.21	2.0051	4 2 40.0	9.691	6	14 30 36.78	1.9778	11 3 13.9	7.647
7	12 57 24.47	2.0036	4 12 20.6	9.661	7	14 32 35.40	1.9779	11 10 51.2	7.584
8	12 59 24.64	2.0021	4 21 59.3	9.630	8	14 34 34.08	1.9783	11 18 25.2	7.540
9	13 1 24.72	2.0006	4 31 36.1	9.600	9	14 36 32.76	1.9785	11 25 55.9	7.486
10	13 3 24.71	1.9991	4 41 11.0	9.566	10	14 38 31.51	1.9791	11 33 23.4	7.439
11	13 5 24.61	1.9977	4 50 44.0	9.533	11	14 40 30.27	1.9795	11 40 47.6	7.378
12	13 7 24.43	1.9968	5 0 15.0	9.499	12	14 42 29.06	1.9801	11 48 8.5	7.319
13	13 9 24.17	1.9960	5 9 44.0	9.465	13	14 44 27.88	1.9806	11 55 26.0	7.263
14	13 11 23.83	1.9953	5 19 10.9	9.431	14	14 46 26.73	1.9813	12 2 40.1	7.207
15	13 13 23.43	1.9946	5 28 35.7	9.396	15	14 48 25.62	1.9817	12 9 50.8	7.150
16	13 15 22.95	1.9934	5 37 58.4	9.360	16	14 50 24.54	1.9826	12 16 58.1	7.088
17	13 17 22.40	1.9928	5 47 18.9	9.324	17	14 52 23.50	1.9830	12 24 1.9	7.033
18	13 19 21.78	1.9921	5 56 37.4	9.287	18	14 54 22.50	1.9837	12 31 2.2	6.977
19	13 21 21.10	1.9913	6 5 53.5	9.250	19	14 56 21.55	1.9844	12 37 59.1	6.918
20	13 23 20.36	1.9905	6 15 7.4	9.213	20	14 58 20.63	1.9851	12 44 52.4	6.859
21	13 25 19.56	1.9898	6 24 19.0	9.174	21	15 0 19.76	1.9859	12 51 42.2	6.800
22	13 27 18.71	1.9893	6 33 28.3	9.135	22	15 2 18.94	1.9867	12 58 28.4	6.740
23	13 29 17.80	1.9884	S. 6 42 35.2	9.096	23	15 4 18.16	1.9875	S. 13 5 11.0	6.680
SATURDAY 26.					MONDAY 28.				
0	13 31 16.84	1.9898	S. 6 51 39.7	9.056	0	15 6 17.44	1.9884	S. 13 11 50.1	6.620
1	13 33 15.83	1.9893	7 0 41.9	9.016	1	15 8 16.77	1.9893	13 18 25.5	6.560
2	13 35 14.78	1.9893	7 9 41.7	8.976	2	15 10 16.14	1.9905	13 24 57.2	6.496
3	13 37 13.69	1.9894	7 18 39.0	8.934	3	15 12 15.57	1.9916	13 31 25.2	6.435
4	13 39 12.56	1.9898	7 27 33.8	8.893	4	15 14 15.06	1.9919	13 37 49.5	6.374
5	13 41 11.39	1.9903	7 36 26.1	8.850	5	15 16 14.60	1.9926	13 44 10.1	6.315
6	13 43 10.18	1.9798	7 45 15.8	8.808	6	15 18 14.20	1.9935	13 50 26.9	6.249
7	13 45 8.94	1.9791	7 54 3.0	8.765	7	15 20 13.86	1.9945	13 56 40.0	6.186
8	13 47 7.67	1.9786	8 2 47.6	8.721	8	15 22 13.58	1.9956	14 2 49.3	6.128
9	13 49 6.37	1.9782	8 11 29.5	8.677	9	15 24 13.36	1.9966	14 8 54.8	6.069
10	13 51 5.05	1.9778	8 20 8.8	8.633	10	15 26 13.20	1.9979	14 14 56.4	6.006
11	13 53 3.70	1.9774	8 28 45.4	8.587	11	15 28 13.11	1.9990	14 20 54.2	5.939
12	13 55 2.33	1.9770	8 37 19.2	8.543	12	15 30 13.08	2.0000	14 26 48.1	5.868
13	13 57 0.94	1.9768	8 45 50.3	8.496	13	15 32 13.11	2.0013	14 32 38.1	5.800
14	13 58 59.54	1.9768	8 54 18.7	8.449	14	15 34 13.22	2.0028	14 38 24.2	5.736
15	14 0 58.13	1.9763	9 2 44.3	8.403	15	15 36 13.39	2.0034	14 44 6.3	5.669
16	14 2 56.70	1.9761	9 11 7.0	8.356	16	15 38 13.63	2.0046	14 49 44.4	5.603
17	14 4 55.26	1.9758	9 19 26.9	8.307	17	15 40 13.94	2.0057	14 55 18.5	5.538
18	14 6 53.81	1.9756	9 27 43.9	8.260	18	15 42 14.32	2.0069	15 0 48.6	5.469
19	14 8 52.37	1.9758	9 35 58.0	8.211	19	15 44 14.77	2.0081	15 6 14.7	5.401
20	14 10 50.92	1.9758	9 44 9.2	8.163	20	15 46 15.29	2.0090	15 11 36.7	5.333
21	14 12 49.47	1.9758	9 52 17.4	8.113	21	15 48 15.89	2.0106	15 16 54.7	5.266
22	14 14 48.02	1.9758	10 0 22.6	8.063	22	15 50 16.56	2.0118	15 22 8.6	5.197
23	14 16 46.57	1.9759	10 8 24.8	8.013	23	15 52 17.31	2.0131	15 27 18.3	5.130
24	14 18 45.13	1.9761	S. 10 16 24.0	7.961	24	15 54 18.13	2.0148	S. 15 32 23.9	5.060

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 29.					THURSDAY 31.				
0	15 54 18.13	2.0143	S. 15° 32' 23.9"	5.808	0	17 32 32.99	2.0787	S. 18° 9' 24.8"	1.873
1	15 56 19.03	2.0166	15 37 25.3	4.989	1	17 34 37.75	2.0799	18 10 44.7	1.390
2	15 58 20.00	2.0160	15 42 22.5	4.919	2	17 36 42.58	2.0811	18 11 59.6	1.306
3	16 0 21.08	2.0193	15 47 15.6	4.849	3	17 38 47.48	2.0823	18 13 9.5	1.132
4	16 2 22.19	2.0186	15 52 4.4	4.778	4	17 40 52.45	2.0834	18 14 14.3	1.089
5	16 4 23.40	2.0206	15 56 49.0	4.707	5	17 42 57.49	2.0846	18 15 14.1	0.965
6	16 6 24.69	2.0232	16 1 29.3	4.636	6	17 45 2.60	2.0857	18 16 8.9	0.871
7	16 8 26.06	2.0255	16 6 5.3	4.565	7	17 47 7.78	2.0869	18 16 58.6	0.787
8	16 10 27.51	2.0248	16 10 37.1	4.493	8	17 49 13.02	2.0879	18 17 43.3	0.703
9	16 12 29.04	2.0292	16 15 4.5	4.421	9	17 51 18.33	2.0890	18 18 22.9	0.618
10	16 14 30.66	2.0276	16 19 27.6	4.348	10	17 53 23.70	2.0900	18 18 57.4	0.533
11	16 16 32.35	2.0299	16 23 46.3	4.275	11	17 55 29.13	2.0911	18 19 26.9	0.448
12	16 18 34.13	2.0308	16 28 0.6	4.203	12	17 57 34.63	2.0921	18 19 51.2	0.363
13	16 20 35.99	2.0317	16 32 10.5	4.130	13	17 59 40.19	2.0931	18 20 10.4	0.278
14	16 22 37.93	2.0331	16 36 16.0	4.058	14	18 1 45.80	2.0941	18 20 24.5	0.193
15	16 24 39.96	2.0345	16 40 17.1	3.986	15	18 3 61.48	2.0951	18 20 33.5	0.107
16	16 26 42.07	2.0360	16 44 13.7	3.906	16	18 5 57.22	2.0961	18 20 37.4	0.021
17	16 28 44.26	2.0373	16 48 5.8	3.831	17	18 8 3.01	2.0969	18 20 36.1	0.064
18	16 30 46.53	2.0386	16 51 53.4	3.756	18	18 10 8.85	2.0978	18 20 29.7	0.160
19	16 32 48.89	2.0400	16 55 36.5	3.681	19	18 12 14.75	2.0986	18 20 18.1	0.236
20	16 34 51.33	2.0414	16 59 15.1	3.605	20	18 14 20.71	2.0997	18 20 1.4	0.322
21	16 36 53.86	2.0429	17 2 49.1	3.529	21	18 16 26.71	2.1006	18 19 39.5	0.406
22	16 38 56.47	2.0443	17 6 18.5	3.453	22	18 18 32.77	2.1015	18 19 12.4	0.494
23	16 40 59.16	2.0466	S. 17° 9' 43.4"	3.376	23	18 20 38.87	2.1026	S. 18° 18' 40.1"	0.580
WEDNESDAY 30.					FRIDAY, FEBRUARY 1.				
0	16 43 1.94	2.0470	S. 17° 13' 3.7"	3.299	0	18 22 45.03	2.1036	S. 18° 18' 2.7"	0.667
1	16 45 4.80	2.0488	17 16 19.3	3.223					
2	16 47 7.74	2.0497	17 19 30.3	3.144					
3	16 49 10.77	2.0511	17 22 36.6	3.065					
4	16 51 13.88	2.0526	17 25 38.2	2.986					
5	16 53 17.07	2.0539	17 28 35.2	2.910					
6	16 55 20.35	2.0553	17 31 27.4	2.831					
7	16 57 23.71	2.0567	17 34 14.9	2.753					
8	16 59 27.15	2.0580	17 36 57.7	2.673					
9	17 1 30.67	2.0595	17 39 35.7	2.594					
10	17 3 34.27	2.0607	17 42 8.9	2.514					
11	17 5 37.95	2.0621	17 44 37.4	2.434					
12	17 7 41.72	2.0634	17 47 1.1	2.354					
13	17 9 45.56	2.0647	17 49 19.9	2.273					
14	17 11 49.49	2.0661	17 51 33.9	2.193					
15	17 13 53.49	2.0674	17 53 43.0	2.112					
16	17 15 57.58	2.0687	17 55 47.3	2.031					
17	17 18 1.74	2.0700	17 57 46.7	1.949					
18	17 20 5.98	2.0713	17 59 41.2	1.867					
19	17 22 10.29	2.0726	18 1 30.8	1.786					
20	17 24 14.68	2.0739	18 3 15.5	1.704					
21	17 26 19.15	2.0751	18 4 55.3	1.621					
22	17 28 23.69	2.0763	18 6 30.1	1.539					
23	17 30 28.30	2.0775	18 7 59.9	1.456					
24	17 32 32.99	2.0787	S. 18° 9' 24.8"	1.373					

PHASES OF THE MOON.

● New Moon, . . . 5 12 29.9
 ☾ First Quarter, . . . 13 4 34.0
 ○ Full Moon, . . . 19 19 35.9
 ☾ Last Quarter, . . . 27 2 47.3

☾ Apogee, 2 8.1
 ☾ Perigee, 18 2.3
 ☾ Apogee, 29 23.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Regulus W.	83° 23' 32"	3083	84° 52' 2"	3083	86° 20' 30"	3087	87° 48' 56"	3087
	Spica W.	30 1 18	3132	31 29 2	3130	32 56 47	3119	34 24 24	3117
	SUN E.	49 23 52	3486	48 3 26	3601	46 43 3	3804	45 22 44	3687
2	Regulus W.	95 10 53	3088	96 39 16	3088	98 7 41	3087	99 36 6	3088
	Spica W.	41 43 59	3106	43 11 59	3106	44 40 1	3104	46 8 6	3103
	SUN E.	38 41 46	3617	37 21 41	3619	36 1 38	3621	34 41 36	3628
3	Regulus W.	106 58 43	3078	108 27 23	3078	109 56 5	3089	111 24 51	3087
	Spica W.	53 29 17	3087	54 57 42	3088	56 26 12	3089	57 54 46	3077
	SUN E.	28 2 2	3635	26 42 15	3636	25 22 34	3644	24 2 58	3649
7	SUN W.	17 0 16	3448	18 21 37	3419	19 43 32	3383	21 5 57	3379
	α Arietis E.	91 44 41	3031	90 14 54	3014	88 44 59	3007	87 14 55	3001
8	SUN W.	28 3 47	3263	29 28 18	3270	30 53 5	3257	32 18 7	3243
	α Arietis E.	79 42 29	3047	78 11 35	3061	76 40 33	3056	75 9 24	3048
	Aldebaran E.	112 25 55	3046	110 52 29	3030	108 18 53	3031	107 45 5	3034
9	SUN W.	39 27 0	3183	40 53 29	3178	42 20 11	3161	43 47 7	3149
	α Arietis E.	67 31 46	3026	65 59 53	3016	64 27 53	3010	63 55 48	3006
	Aldebaran E.	99 53 32	3789	98 18 41	3774	96 43 37	3766	95 8 25	3766
10	SUN W.	51 5 13	3093	52 33 32	3081	54 2 5	3069	55 30 52	3068
	α Arietis E.	55 13 59	3087	53 41 24	3068	52 8 46	3064	50 36 7	3063
	Aldebaran E.	87 9 16	3719	85 32 49	3706	83 56 8	3699	82 19 15	3698
11	SUN W.	62 58 28	3097	64 28 44	3086	65 59 16	3073	67 30 4	3060
	Fomalhaut W.	39 7 59	4376	31 10 50	4378	32 16 31	4369	33 24 48	4360
	α Arietis E.	42 53 1	3086	41 20 36	3003	39 48 20	3013	38 16 16	3024
	Aldebaran E.	74 11 19	3637	72 33 1	3616	70 54 28	3606	69 15 40	3604
	Mars E.	116 8 30	3646	114 28 36	3646	112 48 26	3633	111 7 59	3631
	Pollux E.	117 19 45	3733	115 43 48	3719	114 7 33	3706	112 30 59	3693
12	SUN W.	75 8 3	3099	76 40 29	3081	78 13 12	3069	79 46 12	3066
	Fomalhaut W.	39 38 4	3639	40 57 57	3626	42 19 15	3611	43 41 53	3618
	Aldebaran E.	60 57 45	3635	59 17 21	3623	57 36 40	3611	55 55 43	3609
	Mars E.	102 41 31	3680	100 59 22	3668	99 16 56	3656	97 34 13	3634
	Pollux E.	104 23 41	3694	102 45 20	3611	101 6 40	3600	99 27 43	3605
13	SUN W.	87 35 38	3786	89 10 23	3773	90 45 28	3766	92 20 51	3764
	Fomalhaut W.	50 52 3	3690	52 21 1	3636	53 50 49	3621	55 21 25	3616
	α Pegasi W.	35 36 52	3914	37 2 44	3143	38 30 1	3079	39 58 37	3016
	Aldebaran E.	47 26 33	3686	45 43 50	3634	44 0 49	3611	42 17 29	3606
	Mars E.	88 56 17	3664	87 11 50	3651	85 27 5	3639	83 42 3	3636
	Pollux E.	91 8 22	3630	89 27 36	3607	87 46 33	3604	86 5 12	3608
14	SUN W.	100 22 25	3674	101 59 39	3660	103 37 12	3647	105 15 8	3634
	Fomalhaut W.	63 5 8	3792	64 39 46	3788	66 14 59	3741	67 50 44	3718
	α Pegasi W.	47 38 16	3786	49 13 0	3783	50 48 31	3718	52 24 47	3687
	Aldebaran E.	83 36 15	3684	81 51 5	3631	80 5 36	3608	78 19 48	3606
	Mars E.	74 52 32	3690	73 5 47	3686	71 18 46	3647	69 31 29	3637
	Pollux E.	77 34 7	3693	75 51 3	3610	74 7 43	3609	72 24 7	3609
	Regulus E.	113 40 1	3639	111 54 58	3636	110 9 36	3613	108 23 56	3600

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXD.	P. L. of Dist.
1	Regulus W.	80° 17' 20"	3088	90° 45' 44"	3080	92° 14' 7"	3069	93° 42' 30"	3080
	Spica W.	35 52 23	3115	37 20 14	3114	38 48 7	3112	40 16 2	3110
	SUN E.	44 2 28	3080	42 42 14	3013	41 22 3	3014	40 1 53	3015
2	Regulus W.	101 4 33	3084	102 33 2	3082	104 1 33	3080	105 30 7	3078
	Spica W.	47 36 14	3092	49 4 24	3086	50 32 38	3094	52 0 56	3091
	SUN E.	33 21 37	3026	32 1 40	3026	30 41 45	3028	29 21 52	3031
3	Regulus W.	112 53 41	3084	114 22 35	3080	115 51 34	3056	117 20 37	3052
	Spica W.	50 23 24	3078	60 52 6	3089	62 20 54	3065	63 49 47	3060
	SUN E.	22 43 27	3057	21 24 5	3066	20 4 56	3061	18 46 1	3066
7	SUN W.	22 28 48	3060	23 52 2	3031	25 15 38	3014	26 39 33	3028
	α Arietis E.	85 44 42	2893	84 14 21	2897	82 43 52	2891	81 13 15	2793
8	SUN W.	33 43 25	3221	35 8 58	3219	36 34 44	3207	38 0 45	3196
	α Arietis E.	73 38 7	2948	72 6 43	2937	70 35 11	2931	69 3 32	2926
	Aldebaran E.	106 11 8	2815	104 37 0	2808	103 2 41	2799	101 28 12	2791
9	SUN W.	45 14 17	3138	46 41 40	3137	48 9 17	3115	49 37 8	3104
	α Arietis E.	61 23 36	2901	59 51 19	2898	58 18 57	2894	56 46 30	2891
	Aldebaran E.	93 33 59	2747	91 57 22	2739	90 21 32	2729	88 45 30	2719
10	SUN W.	56 59 54	3046	58 29 10	3034	59 58 41	3022	61 28 27	3009
	α Arietis E.	49 3 27	2959	47 30 46	2964	45 58 7	2957	44 25 32	2951
	Aldebaran E.	80 42 8	2899	79 4 47	2890	77 27 12	2849	75 49 23	2838
11	SUN W.	60 1 8	2946	70 32 27	2964	72 4 3	2921	73 35 55	2909
	Fomalhaut W.	34 35 29	2925	35 48 20	2913	37 3 9	2709	38 19 46	2697
	α Arietis E.	36 44 27	2989	35 12 59	2966	33 41 54	2962	32 11 18	2943
	Aldebaran E.	67 36 37	2998	65 57 18	2971	64 17 43	2959	62 37 52	2948
	Mars E.	109 27 15	2809	107 46 15	2497	106 4 57	2486	104 23 22	2473
	Pollux E.	110 54 8	2678	109 16 58	2664	107 39 31	2661	106 1 45	2638
12	SUN W.	81 19 29	2841	82 53 3	2827	84 26 56	2818	86 1 7	2798
	Fomalhaut W.	45 5 44	2907	46 30 48	2903	47 56 32	2158	49 23 58	2106
	Aldebaran E.	54 14 28	2487	52 32 56	2474	50 51 6	2462	49 8 58	2449
	Mars E.	95 51 12	2422	94 7 55	2400	92 24 20	2388	90 40 27	2376
	Pollux E.	97 48 26	2673	96 8 52	2660	94 29 0	2645	92 48 50	2632
13	SUN W.	93 56 33	2739	95 32 33	2715	97 8 52	2702	98 45 29	2688
	Fomalhaut W.	56 52 47	2911	58 24 32	2929	59 57 39	2848	61 31 5	2819
	α Pegasi W.	41 28 27	2904	42 59 25	2916	44 31 25	2890	46 4 23	2928
	Aldebaran E.	40 33 51	2986	38 49 55	2972	37 5 40	2969	35 21 7	2946
	Mars E.	81 56 44	2818	80 11 6	2804	78 25 12	2782	76 39 1	2781
	Pollux E.	84 28 33	2470	82 41 37	2460	80 59 24	2449	79 16 54	2433
14	SUN W.	106 53 12	2921	108 31 40	2907	110 10 25	2894	111 49 28	2881
	Fomalhaut W.	60 27 0	2926	71 3 46	2924	72 41 1	2905	74 18 42	2935
	α Pegasi W.	54 1 45	2927	55 39 22	2929	57 17 40	2909	58 56 30	2877
	Aldebaran E.	26 33 42	2298	24 47 19	2271	23 0 37	2260	21 13 37	2247
	Mars E.	67 43 55	2228	65 56 5	2216	64 8 1	2206	62 19 43	2196
	Pollux E.	70 40 16	2379	68 56 10	2369	67 11 49	2360	65 27 14	2349
	Regulus E.	106 37 57	2988	104 51 39	2975	103 5 4	2963	101 18 10	2951

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
15	Sun W.	113° 28' 48"	2569	115° 8' 27"	2567	116° 48' 21"	2545	118° 28' 32"	2533
	Fomalhaut W.	75 56 49	2616	77 35 20	2601	79 14 14	2585	80 53 30	2569
	α Pegasi W.	60 35 56	2664	62 15 54	2633	63 56 22	2613	65 37 20	2493
	Mars E.	60 31 12	2188	58 42 27	2180	56 53 29	2173	55 4 20	2166
	Pollux E.	63 42 26	2340	61 57 25	2333	60 12 13	2326	58 26 50	2318
	Regulus E.	99 30 58	2389	97 43 28	2377	95 55 41	2316	94 7 37	2304
16	Sun W.	126 53 19	2481	128 34 59	2473	130 16 52	2464	131 58 56	2456
	Fomalhaut W.	89 14 35	2610	90 55 35	2601	92 36 47	2493	94 18 10	2487
	α Pegasi W.	74 8 29	2410	75 51 50	2396	77 35 30	2384	79 19 27	2373
	Mars E.	45 56 16	2143	44 6 21	2141	42 16 25	2141	40 26 29	2143
	Pollux E.	49 37 53	2399	47 51 52	2399	46 5 51	2390	44 19 51	2393
	Regulus E.	85 3 13	2183	83 13 35	2144	81 23 43	2136	79 33 37	2137
17	α Pegasi W.	88 2 52	2331	89 48 7	2325	91 33 30	2321	93 19 0	2317
	α Arietis W.	44 24 47	2326	46 10 10	2305	47 56 2	2367	49 42 20	2373
	Pollux E.	35 32 11	2368	33 47 35	2380	32 3 31	2406	30 20 7	2443
	Regulus E.	70 20 14	2093	68 29 3	2087	66 37 44	2083	64 46 19	2079
18	α Arietis W.	58 38 44	2319	60 26 43	2313	62 14 51	2306	64 3 7	2304
	Aldebaran W.	24 41 16	2061	26 33 15	2061	28 25 15	2061	30 17 15	2061
	Regulus E.	55 27 55	2088	53 36 6	2088	51 44 17	2086	49 52 29	2089
	Spica E.	108 59 0	2074	107 7 22	2073	105 15 41	2073	103 24 0	2074
19	α Arietis W.	73 5 20	2301	74 53 46	2304	76 42 8	2307	78 30 24	2313
	Aldebaran W.	39 36 39	2075	41 28 17	2079	43 19 48	2086	45 11 11	2090
	Regulus E.	40 34 17	2086	38 42 57	2092	36 51 46	2090	35 0 45	2107
	Spica E.	94 6 8	2086	92 14 48	2081	90 23 35	2097	88 32 31	2108
20	α Arietis W.	87 29 39	2348	89 16 55	2368	91 3 55	2368	92 50 42	2381
	Aldebaran W.	54 25 25	2181	56 15 37	2141	58 5 34	2161	59 55 16	2163
	Mars W.	17 54 28	2690	19 33 24	2618	21 14 12	2463	22 56 31	2406
	Spica E.	79 19 51	2144	77 29 58	2184	75 40 21	2165	73 51 0	2176
	Saturn E.	110 10 9	2184	108 20 32	2164	106 31 10	2174	104 42 3	2186
21	α Arietis W.	101 39 56	2349	103 24 45	2365	105 9 10	2393	106 53 11	2399
	Aldebaran W.	68 59 17	2326	70 47 7	2389	72 34 36	2363	74 21 44	2369
	Mars W.	31 40 3	2809	33 25 49	2806	35 11 39	2806	36 57 30	2809
	Pollux W.	27 28 54	2625	29 7 15	2697	30 46 14	2677	32 25 40	2682
	Spica E.	64 48 44	2341	63 1 17	2365	61 14 12	2370	59 27 29	2366
	Saturn E.	95 40 55	2348	93 53 39	2363	92 6 44	2377	90 20 11	2391
	Venus E.	123 4 35	2421	121 21 29	2436	119 38 47	2463	117 56 26	2469
22	Aldebaran W.	83 11 40	2349	84 56 28	2366	86 40 52	2363	88 24 51	2401
	Mars W.	45 45 0	2346	47 29 52	2368	49 14 27	2370	50 58 45	2363
	Pollux W.	40 46 9	2444	42 26 21	2448	44 6 27	2464	45 46 25	2463
	Spica E.	50 39 52	2371	48 55 35	2389	47 11 44	2407	45 28 19	2436
	Saturn E.	81 33 3	2373	79 48 48	2389	78 4 58	2406	76 21 32	2434
	Antares E.	96 25 38	2408	94 42 15	2428	92 59 16	2443	91 16 41	2460
	Venus E.	108 30 44	2467	106 50 50	2476	105 11 22	2484	103 32 19	2493
23	Aldebaran W.	96 58 30	2489	98 39 58	2496	100 21 0	2496	102 1 37	2544
	Mars W.	59 35 23	2485	61 17 39	2471	62 59 32	2467	64 41 3	2504
	Pollux W.	54 3 3	2617	55 41 35	2630	57 19 50	2643	58 57 46	2667
	Spica E.	36 58 9	2627	35 17 33	2648	33 37 26	2670	31 57 50	2693

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XV ^h .	P. L. of DIST.	XVIII ^h .	P. L. of DIST.	XXI ^h .	P. L. of DIST.
15	SUN W.	120° 8' 59"	2592	121° 49' 42"	2511	123° 30' 40"	2501	125° 11' 59"	2491
	Fomalhaut W.	82 33 7	2586	84 13 4	2543	85 53 18	2580	87 83 49	2620
	α Pegasi W.	67 18 45	2474	69 0 34	2486	70 42 49	2489	72 25 28	2424
	Mars E.	53 15 1	2189	51 25 31	2183	49 35 53	2149	47 46 8	2146
	Pollux E.	56 41 17	2313	54 55 35	2307	53 9 46	2304	51 23 52	2300
	Regulus E.	92 19 16	2194	90 30 38	2183	88 41 45	2172	86 52 36	2168
16	SUN W.	133 41 12	2448	135 23 38	2441	137 6 13	2436	138 48 57	2431
	Fomalhaut W.	95 59 42	2481	97 41 22	2477	99 23 9	2474	101 4 59	2472
	α Pegasi W.	81 3 41	2362	82 48 10	2363	84 32 52	2344	86 17 47	2337
	Mars E.	38 36 34	2146	36 46 46	2154	34 57 9	2163	33 7 46	2174
	Pollux E.	42 33 56	2307	40 48 8	2315	39 2 31	2327	37 17 10	2342
	Regulus E.	77 43 19	2119	75 52 49	2113	74 2 7	2105	72 11 15	2098
17	α Pegasi W.	95 4 35	2314	96 50 13	2312	98 35 53	2312	100 21 37	2316
	α Arietis W.	51 29 2	2366	53 16 3	2346	55 3 22	2336	56 50 56	2327
	Pollux E.	28 37 33	2486	26 56 0	2440	25 15 42	2407	23 36 57	2369
	Regulus E.	62 54 47	2075	61 3 9	2073	59 11 27	2070	57 19 42	2069
18	α Arietis W.	65 51 29	2301	67 39 55	2300	69 28 23	2309	71 16 52	2300
	Aldebaran W.	32 9 13	2062	34 1 10	2064	35 53 4	2067	37 44 54	2070
	Regulus E.	48 0 42	2071	46 8 59	2074	44 17 19	2077	42 25 45	2081
	Spica E.	101 32 20	2075	99 40 42	2076	97 49 6	2080	95 57 35	2068
19	α Arietis W.	80 18 34	2217	82 6 36	2224	83 54 28	2231	85 42 9	2239
	Aldebaran W.	47 2 24	2088	48 53 27	2105	50 44 19	2113	52 34 59	2122
	Regulus E.	33 9 55	2115	31 19 19	2124	29 28 57	2136	27 36 51	2148
	Spica E.	86 41 36	2110	84 50 52	2117	83 0 19	2125	81 9 58	2124
20	α Arietis W.	94 37 11	2292	96 23 22	2305	98 9 13	2319	99 54 45	2333
	Aldebaran W.	61 44 41	2174	63 33 48	2186	65 22 37	2196	67 11 7	2212
	Mars W.	24 39 59	2371	26 24 16	2346	28 9 9	2326	29 54 28	2317
	Spica E.	72 1 55	2188	70 13 9	2200	68 24 41	2213	66 36 32	2227
	Saturn E.	102 53 13	2195	101 4 41	2208	99 16 27	2221	97 28 31	2226
21	α Arietis W.	108 36 47	2417	110 19 58	2426	112 2 41	2435	113 44 56	2477
	Aldebaran W.	76 8 29	2264	77 54 52	2300	79 40 51	2316	81 26 28	2323
	Mars W.	38 43 17	2313	40 28 58	2319	42 14 31	2326	43 59 52	2336
	Pollux W.	34 5 27	2363	35 45 28	2345	37 25 38	2342	39 5 53	2341
	Spica E.	57 41 9	2302	55 55 13	2319	54 9 41	2326	52 24 34	2333
	Saturn E.	88 33 59	2307	86 48 10	2323	85 2 44	2329	83 17 42	2335
	Venus E.	115 14 29	2486	113 32 56	2304	111 51 48	2321	110 11 4	2329
22	Aldebaran W.	90° 8' 25"	2418	91 51 34	2426	93 34 18	2435	95 16 37	2473
	Mars W.	52 42 45	2396	54 26 25	2410	56 9 45	2425	57 52 45	2440
	Pollux W.	47 26 12	2372	49 5 46	2381	50 45 7	2392	52 24 18	2404
	Spica E.	43 45 21	2445	42 2 51	2465	40 20 48	2466	38 39 14	2506
	Saturn E.	74 38 31	2441	72 55 56	2460	71 13 46	2477	69 32 1	2495
	Antares E.	89 34 30	2477	87 52 45	2495	86 11 25	2513	84 30 30	2532
	Venus E.	101 53 42	2633	100 15 32	2662	98 37 48	2672	97 0 30	2692
23	Aldebaran W.	103 41 49	2663	105 21 35	2680	107 0 57	2699	108 39 54	2617
	Mars W.	66 22 11	2620	68 2 56	2637	69 43 18	2643	71 23 17	2670
	Pollux W.	60 35 23	2672	62 12 40	2687	63 49 37	2702	65 26 14	2717
	Spica E.	30 18 44	2616	28 40 11	2640	27 2 11	2655	25 24 44	2680

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	IIIh.	P. L. of DIST.	VIh.	P. L. of DIST.	IXh.	P. L. of DIST.
23	Saturn E.	67° 50' 41"	2614	66° 9' 47"	2632	64° 29' 18"	2651	62° 49' 15"	2669
	Antares E.	82 50 1	2651	81 9 58	2669	79 30 20	2688	77 51 8	2707
	Venus E.	95 23 39	2712	93 47 15	2733	92 11 17	2752	90 35 46	2772
	SUN E.	138 2 34	2834	136 29 16	2872	134 56 21	2891	133 23 50	2909
24	Aldebaran W.	110 18 26	2635	111 56 34	2662	113 34 18	2670	115 11 39	2687
	Mars W.	73 2 53	2689	74 42 6	2694	76 20 55	2691	77 59 22	2698
	Pollux W.	67 2 31	2733	68 38 27	2748	70 14 3	2764	71 49 18	2779
	Regulus W.	30 19 3	2653	31 56 47	2668	33 34 8	2685	35 11 8	2701
	Saturn E.	54 35 15	2690	52 57 41	2678	51 20 31	2696	49 43 45	2713
	Antares E.	69 41 39	2703	68 5 3	2722	66 28 53	2741	64 53 8	2761
	Venus E.	82 44 40	2671	81 11 44	2691	79 39 13	2710	78 7 6	2729
	SUN E.	125 47 7	2902	124 16 57	2921	122 47 10	2939	121 17 46	2957
25	Mars W.	86 5 59	2719	87 42 13	2735	89 18 6	2751	90 53 38	2766
	Pollux W.	79 40 27	2656	81 13 40	2673	82 46 34	2687	84 19 9	2692
	Regulus W.	43 10 44	2782	44 45 36	2797	46 20 9	2811	47 54 21	2827
	Saturn E.	41 45 44	2709	40 11 15	2815	38 37 7	2831	37 3 20	2848
	Antares E.	57 0 45	2659	55 27 31	2677	53 54 43	2696	52 22 19	2716
	Venus E.	70 32 32	2692	69 2 46	2699	67 33 22	2687	66 4 20	2674
26	SUN E.	113 56 18	3145	112 29 4	3158	111 2 11	3180	109 35 38	3196
	Mars W.	98 46 21	2640	100 19 57	2654	101 53 15	2667	103 26 16	2680
	Pollux W.	91 57 23	2673	93 28 9	2687	94 58 38	2690	96 28 51	2693
	Regulus W.	55 40 45	2696	57 13 9	2699	58 45 16	2691	60 17 8	2684
	Saturn E.	29 19 27	2624	27 47 38	2638	26 16 7	2653	24 44 55	2667
	Antares E.	44 46 32	2614	43 16 37	2634	41 47 7	2656	40 18 3	2676
	Venus E.	58 44 11	3153	57 17 7	3168	55 50 20	3183	54 23 50	3197
	SUN E.	102 27 36	3273	101 2 52	3287	99 38 25	3300	98 14 14	3313
27	Pollux W.	103 56 5	3072	105 24 49	3083	106 53 19	3094	108 21 36	3104
	Regulus W.	67 52 47	2686	69 23 15	2697	70 53 32	2696	72 23 37	2694
	Antares E.	32 59 38	3199	31 33 27	3226	30 7 51	3259	28 42 52	3294
	Venus E.	47 15 17	3250	45 50 17	3270	44 25 31	3281	23 0 57	3290
	SUN E.	91 16 58	3373	89 54 11	3384	88 31 36	3393	87 9 11	3403
28	Regulus W.	79 51 37	3060	81 20 48	3066	82 49 51	3061	84 18 48	3066
	Spica W.	26 34 31	3106	28 2 33	3107	29 30 34	3107	30 58 35	3108
	Venus E.	36 0 49	3233	34 37 15	3240	33 13 50	3246	31 50 32	3252
	SUN E.	80 19 36	3442	78 58 7	3446	77 36 44	3454	76 15 28	3459
29	Regulus W.	91 42 19	3082	93 10 50	3086	94 39 18	3087	96 7 44	3087
	Spica W.	38 18 30	3110	39 46 27	3110	41 14 24	3110	42 42 22	3110
	SUN E.	69 30 25	3477	68 9 85	3480	66 48 48	3481	65 28 3	3488
30	Regulus W.	103 29 48	3086	104 58 15	3086	106 26 44	3083	107 55 14	3081
	Spica W.	50 2 26	3102	51 30 33	3100	52 58 43	3097	54 26 56	3094
	Saturn W.	18 31 37	3129	19 59 11	3134	21 26 51	3119	22 54 37	3114
	SUN E.	58 44 29	3482	57 23 44	3480	56 2 58	3479	54 42 10	3477
31	Spica W.	61 49 6	3074	63 17 47	3069	64 46 34	3065	66 15 28	3069
	Saturn W.	30 14 59	3089	31 43 22	3083	33 11 52	3078	34 40 29	3072
	Antares W.	18 18 27	3705	19 35 9	3613	20 53 29	3617	22 13 13	3474
	SUN E.	47 57 24	3480	46 36 14	3455	45 15 0	3451	43 53 40	3446

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIF.	XVh.	P. L. of DIF.	XVIIIh.	P. L. of DIF.	XXIh.	P. L. of DIF.
23	Saturn E.	61° 9' 37"	2867	59° 30' 24"	2868	57° 51' 36"	2824	56° 13' 13"	2843
	Antares E.	76 12 22	2826	74 34 3	2845	72 56 9	2864	71 18 41	2884
	Venus E.	89 0 41	2792	87 26 2	2811	85 51 49	2831	84 18 2	2851
	SUN E.	131 51 42	2927	130 19 58	2946	128 48 38	2965	127 17 41	2984
24	Aldebaran W.	116 48 36	2704	118 25 10	2722	120 1 21	2738	121 37 10	2755
	Mars W.	79 37 26	2658	81 15 7	2671	82 52 26	2687	84 29 24	2704
	Pollux W.	73 24 13	2756	74 58 47	2811	76 33 0	2826	78 6 54	2843
	Regulus W.	36 47 46	2718	38 24 2	2734	39 59 57	2750	41 35 31	2766
	Saturn E.	48 7 23	2781	46 31 25	2748	44 55 49	2765	43 20 35	2782
	Antares E.	63 17 49	2780	61 42 55	2799	60 8 26	2819	58 34 23	2838
	Venus E.	76 35 24	2948	75 4 6	2967	73 33 11	2985	72 2 40	3004
	SUN E.	119 48 44	3076	118 20 5	3094	116 51 48	3111	115 23 52	3129
25	Mars W.	92 28 50	2792	94 3 42	2797	95 38 14	2811	97 12 27	2826
	Pollux W.	85 51 24	2917	87 23 21	2931	88 55 0	2946	90 26 20	2960
	Regulus W.	49 28 15	2840	51 1 50	2855	52 35 6	2869	54 8 4	2883
	Saturn E.	35 29 54	2868	33 56 48	2879	32 24 1	2894	30 51 34	2909
	Antares E.	50 50 20	2936	49 18 46	2944	47 47 37	2974	46 16 52	2984
	Venus E.	64 35 38	3091	63 7 17	3107	61 39 16	3123	60 11 34	3138
	SUN E.	108 9 24	3212	106 43 29	3228	105 17 53	3243	103 52 36	3259
26	Mars W.	104 59 0	2894	106 31 28	2906	108 3 39	2918	109 35 35	2930
	Pollux W.	97 58 48	3026	99 28 29	3038	100 57 55	3049	102 27 7	3061
	Regulus W.	61 48 44	2946	63 20 5	2967	64 51 13	2967	66 22 7	2977
	Saturn E.	23 14 2	2981	21 43 26	2997	20 13 8	3011	18 43 9	3026
	Antares E.	38 49 26	3100	37 21 15	3122	35 53 33	3147	34 26 20	3173
	Venus E.	52 57 37	3210	51 31 40	3228	50 5 58	3250	48 40 30	3247
	SUN E.	96 50 19	3326	95 26 38	3338	94 3 11	3351	92 39 58	3362
27	Pollux W.	109 49 41	3114	111 17 34	3124	112 45 15	3133	114 12 45	3142
	Regulus W.	73 53 32	3022	75 23 17	3030	76 52 52	3038	78 22 19	3044
	Antares E.	27 18 34	3232	25 55 0	3277	24 32 17	3296	23 10 30	3284
	Venus E.	41 36 34	3300	40 12 23	3309	38 48 22	3318	37 24 31	3325
	SUN E.	85 46 57	3411	84 24 53	3420	83 2 59	3428	81 41 14	3435
28	Regulus W.	85 47 40	3070	87 16 26	3074	88 45 7	3078	90 13 45	3080
	Spica W.	32 26 35	3109	33 54 35	3109	35 22 34	3109	36 50 32	3110
	Venus E.	30 27 21	3258	29 4 16	3263	27 41 17	3267	26 18' 23	3271
	SUN E.	74 54 18	3463	73 33 13	3468	72 12 13	3471	70 51 17	3474
29	Regulus W.	97 36 10	3068	99 4 34	3068	100 32 59	3067	102 1 23	3067
	Spica W.	44 10 20	3109	45 38 19	3106	47 6 20	3106	48 34 22	3106
	SUN E.	64 7 19	3283	62 46 37	3284	61 25 55	3284	60 5 12	3285
30	Regulus W.	109 23 48	3078	110 52 24	3076	112 21 4	3072	113 49 49	3068
	Spica W.	55 55 13	3091	57 23 34	3087	58 52. 0	3088	60 20 30	3079
	Saturn W.	24 22 29	3110	25 50 27	3106	27 18 32	3099	28 46 42	3094
	SUN E.	53 21 20	3274	52 0 26	3271	50 39 29	3267	49 18 29	3268
31	Spica W.	67 44 28	3053	69 13 35	3047	70 42 50	3041	72 12 13	3034
	Saturn W.	36 9 14	3065	37 38 6	3059	39 7 6	3052	40 36 15	3045
	Antares W.	23 34 8	3219	24 56 3	3273	26 18 50	3282	27 42 24	3286
	SUN E.	42 32 15	3440	41 10 44	3436	39 49 7	3439	38 27 23	3423

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Fri.	1	^h 20 ^m 58 ^s 46.21	10.196	S. 17° 8' 27.2"	42.60	16' 16.02"	68.29	^m 13 ^s 50.11	0.339
Sat.	2	21 2 50.52	10.162	16 51 15.5	43.34	16 15.87	68.18	13 57.84	0.305
Sun.	3	21 6 54.01	10.128	16 33 46.2	44.07	16 15.71	68.06	14 4.75	0.271
Mon.	4	21 10 56.68	10.094	16 15 59.6	44.78	16 15.55	67.95	14 10.85	0.237
Tues.	5	21 14 58.52	10.060	15 57 56.0	45.48	16 15.38	67.83	14 16.13	0.203
Wed.	6	21 18 59.54	10.026	15 39 36.1	46.15	16 15.22	67.72	14 20.59	0.169
Thur.	7	21 22 59.75	9.992	15 21 0.4	46.81	16 15.05	67.60	14 24.23	0.135
Fri.	8	21 26 59.14	9.958	15 2 9.1	47.45	16 14.88	67.48	14 27.05	0.101
Sat.	9	21 30 57.72	9.925	14 43 2.7	48.06	16 14.70	67.37	14 29.07	0.068
Sun.	10	21 34 55.50	9.891	14 23 41.6	48.66	16 14.52	67.26	14 30.29	0.034
Mon.	11	21 38 52.47	9.858	14 4 6.2	49.25	16 14.34	67.15	14 30.71	0.001
Tues.	12	21 42 48.63	9.825	13 44 16.9	49.82	16 14.16	67.04	14 30.33	0.032
Wed.	13	21 46 44.01	9.793	13 24 14.0	50.37	16 13.97	66.93	14 29.17	0.064
Thur.	14	21 50 38.64	9.761	13 3 58.1	50.91	16 13.78	66.82	14 27.24	0.095
Fri.	15	21 54 32.51	9.730	12 43 29.7	51.43	16 13.58	66.72	14 24.56	0.126
Sat.	16	21 58 25.62	9.699	12 22 49.2	51.93	16 13.38	66.61	14 21.13	0.157
Sun.	17	22 2 18.00	9.669	12 1 57.0	52.42	16 13.18	66.51	14 16.98	0.187
Mon.	18	22 6 9.68	9.640	11 40 53.3	52.89	16 12.97	66.41	14 12.11	0.216
Tues.	19	22 10 0.66	9.611	11 19 38.4	53.34	16 12.75	66.31	14 6.54	0.244
Wed.	20	22 13 50.96	9.583	10 58 12.9	53.77	16 12.53	66.21	14 0.31	0.272
Thur.	21	22 17 40.59	9.556	10 36 37.3	54.19	16 12.31	66.12	13 53.42	0.300
Fri.	22	22 21 29.60	9.530	10 14 51.8	54.59	16 12.08	66.03	13 45.89	0.326
Sat.	23	22 25 17.99	9.505	9 52 56.9	54.98	16 11.85	65.94	13 37.75	0.351
Sun.	24	22 29 5.78	9.480	9 30 53.1	55.35	16 11.62	65.85	13 29.01	0.375
Mon.	25	22 32 52.98	9.456	9 8 40.6	55.70	16 11.38	65.76	13 19.68	0.399
Tues.	26	22 36 39.62	9.433	8 46 19.8	56.03	16 11.14	65.67	13 9.78	0.422
Wed.	27	22 40 25.70	9.411	8 23 51.1	56.35	16 10.89	65.59	12 59.34	0.445
Thur.	28	22 44 11.26	9.389	8 1 15.0	56.65	16 10.65	65.51	12 48.38	0.467
Fri.	29	22 47 56.31	9.369	S. 7 38 31.9	56.94	16 10.40	65.44	12 36.91	0.488

Note. — Mean Time of the Semi-diameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.					
		Apparent Right Ascension.		Diff. for 1 hour.	Apparent Declination.		Diff. for 1 hour.								
		^h ^m ^s	^s		[°] ['] ["]	^s									
Fri.	1	20	58	43.86	10.196	S. 17	8	37.0	42.60	13	50.03	0.339	20	44	53.83
Sat.	2	21	2	48.15	10.162	16	51	25.6	43.34	13	57.77	0.305	20	48	50.38
Sun.	3	21	6	51.63	10.128	16	33	56.5	44.07	14	4.69	0.271	20	52	46.94
Mon.	4	21	10	54.29	10.094	16	16	10.2	44.78	14	10.80	0.237	20	56	43.49
Tues.	5	21	14	56.12	10.060	15	58	6.9	45.48	14	16.07	0.203	21	0	40.05
Wed.	6	21	18	57.14	10.026	15	39	47.2	46.15	14	20.54	0.169	21	4	36.60
Thur.	7	21	22	57.35	9.992	15	21	11.6	46.81	14	24.20	0.135	21	8	33.15
Fri.	8	21	26	56.74	9.958	15	2	20.5	47.45	14	27.08	0.101	21	12	29.71
Sat.	9	21	30	55.32	9.925	14	43	14.3	48.06	14	29.06	0.068	21	16	26.26
Sun.	10	21	34	53.10	9.891	14	23	53.4	48.66	14	30.28	0.034	21	20	22.82
Mon.	11	21	38	50.09	9.858	14	4	18.2	49.25	14	30.72	0.001	21	24	19.37
Tues.	12	21	42	46.26	9.825	13	44	29.0	49.82	14	30.34	0.032	21	28	15.92
Wed.	13	21	46	41.65	9.793	13	24	26.2	50.37	14	29.17	0.064	21	32	12.48
Thur.	14	21	50	36.29	9.761	13	4	10.4	50.91	14	27.26	0.095	21	36	9.03
Fri.	15	21	54	30.17	9.730	12	43	42.1	51.43	14	24.59	0.126	21	40	5.58
Sat.	16	21	58	23.30	9.699	12	23	1.7	51.93	14	21.16	0.157	21	44	2.14
Sun.	17	22	2	15.70	9.669	12	2	9.5	52.23	14	17.01	0.187	21	47	58.69
Mon.	18	22	6	7.40	9.640	11	41	5.8	52.89	14	12.16	0.216	21	51	55.24
Tues.	19	22	9	58.40	9.611	11	19	51.0	53.34	14	6.60	0.244	21	55	51.80
Wed.	20	22	13	48.72	9.583	10	58	25.5	53.77	14	0.37	0.272	21	59	48.35
Thur.	21	22	17	38.38	9.556	10	36	49.9	54.19	13	53.48	0.300	22	3	44.90
Fri.	22	22	21	27.41	9.530	10	15	4.4	54.59	13	45.96	0.326	22	7	41.45
Sat.	23	22	25	15.83	9.505	9	53	9.5	54.98	13	37.82	0.351	22	11	38.01
Sun.	24	22	29	3.65	9.480	9	31	5.6	55.35	13	29.09	0.375	22	15	34.56
Mon.	25	22	32	50.88	9.456	9	8	53.0	55.70	13	19.77	0.399	22	19	31.11
Tues.	26	22	36	37.54	9.433	8	46	32.1	56.03	13	9.88	0.422	22	23	27.66
Wed.	27	22	40	23.66	9.411	8	24	3.3	56.35	12	59.44	0.445	22	27	24.22
Thur.	28	22	44	9.25	9.389	8	1	27.1	56.65	12	48.48	0.467	22	31	20.77
Fri.	29	22	47	54.33	9.368	S. 7	39	43.9	56.94	12	37.01	0.489	22	35	17.32

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	32	312 ^o 13' 20.9"	13' 16.6"	152.22	+0.58	9.9937183	28.4	^h 3 ^m 14 ^s 34.21
2	33	313 14 13.8	14 9.4	152.18	0.55	.9937870	28.9	3 10 38.31
3	34	314 15 5.6	15 1.1	152.14	0.48	.9938570	29.4	3 6 42.40
4	35	315 15 56.3	15 51.6	152.09	0.39	.9939282	29.9	3 2 46.49
5	36	316 16 45.7	16 40.9	152.03	0.28	.9940006	30.4	2 58 50.57
6	37	317 17 33.7	17 28.8	151.97	0.16	.9940743	30.9	2 54 54.66
7	38	318 18 20.3	18 15.3	151.91	+0.08	.9941493	31.5	2 50 58.75
8	39	319 19 5.5	19 0.3	151.85	-0.11	.9942256	32.0	2 47 2.85
9	40	320 19 49.2	19 43.9	151.79	0.24	.9943033	32.6	2 43 6.94
10	41	321 20 31.3	20 25.9	151.72	0.35	.9943824	33.2	2 39 11.03
11	42	322 21 11.8	21 6.3	151.65	0.44	.9944630	33.9	2 35 15.12
12	43	323 21 50.6	21 45.0	151.58	0.50	.9945453	34.5	2 31 19.21
13	44	324 22 27.6	22 21.9	151.51	0.53	.9946293	35.2	2 27 23.31
14	45	325 23 2.9	22 57.1	151.43	0.53	.9947151	35.8	2 23 27.41
15	46	326 23 36.3	23 30.4	151.36	0.50	.9948027	36.5	2 19 31.50
16	47	327 24 8.0	24 2.0	151.29	0.45	.9948923	37.1	2 15 35.59
17	48	328 24 38.1	24 32.0	151.22	0.37	.9949840	38.8	2 11 39.68
18	49	329 25 6.5	25 0.3	151.15	0.27	.9950778	39.5	2 7 43.77
19	50	330 25 33.2	25 26.9	151.08	0.15	.9951737	40.3	2 3 47.87
20	51	331 25 58.3	25 51.9	151.01	-0.02	.9952716	41.1	1 59 51.96
21	52	332 26 21.9	26 15.4	150.96	+0.12	.9953715	41.9	1 55 56.05
22	53	333 26 44.0	26 37.4	150.89	0.26	.9954732	42.7	1 52 0.15
23	54	334 27 4.7	26 58.0	150.83	0.39	.9955767	43.4	1 48 4.24
24	55	335 27 23.9	27 17.1	150.77	0.50	.9956818	44.1	1 44 8.33
25	56	336 27 41.6	27 34.8	150.71	0.58	.9957884	44.7	1 40 12.43
26	57	337 27 57.9	27 51.0	150.65	0.63	.9958965	45.2	1 36 16.53
27	58	338 28 12.7	28 5.7	150.59	0.65	.9960057	45.7	1 32 20.62
28	59	339 28 26.0	28 18.9	150.52	0.65	.9961159	46.1	1 28 24.71
29	60	340 28 37.7	28 30.5	150.46	+0.62	9.9962270	46.4	1 24 28.80

Note: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	14' 51.0	14' 53.4	54' 23.4	+0.67	54' 32.2	+0.80	^h 22 ^m 21.4	^m 2.01	^d 26.5
2	14 56.2	14 59.4	54 42.5	0.91	54 54.0	1.00	23 9.8	2.01	27.5
3	15 2.8	15 6.4	55 6.5	1.08	55 19.8	1.14	23 58.1	2.00	28.5
4	15 10.2	15 14.1	55 33.7	1.18	55 48.1	1.21	6		29.5
5	15 18.1	15 22.1	56 2.7	1.23	56 17.5	1.23	0 46.1	1.99	0.7
6	15 26.1	15 30.1	56 32.3	1.23	56 47.1	1.23	1 33.9	1.99	1.7
7	15 34.1	15 38.1	57 1.7	1.21	57 16.2	1.20	2 21.7	2.00	2.7
8	15 42.0	15 45.8	57 30.4	1.18	57 44.4	1.15	3 9.9	2.03	3.7
9	15 49.5	15 53.1	57 58.1	1.13	58 11.5	1.10	3 59.1	2.08	4.7
10	15 56.7	16 0.2	58 24.6	1.08	58 37.3	1.04	4 49.9	2.16	5.7
11	16 3.5	16 6.7	58 49.5	0.99	59 1.1	0.93	5 42.8	2.25	6.7
12	16 9.6	16 12.2	59 11.9	0.86	59 21.6	0.76	6 38.1	2.34	7.7
13	16 14.6	16 16.5	59 30.1	0.65	59 37.2	0.52	7 35.5	2.42	8.7
14	16 17.9	16 18.8	59 42.6	+0.36	59 45.9	+0.18	8 34.3	2.46	9.7
15	16 19.1	16 18.7	59 46.9	-0.02	59 45.4	-0.24	9 33.4	2.44	10.7
16	16 17.5	16 15.6	59 41.0	0.47	59 33.9	0.70	10 31.5	2.38	11.7
17	16 12.9	16 9.5	59 24.1	0.93	59 11.6	1.15	11 27.5	2.28	12.7
18	16 5.4	16 0.7	58 56.5	1.35	58 39.2	1.53	12 21.0	2.18	13.7
19	15 55.5	15 49.8	58 20.0	1.67	57 59.2	1.78	13 12.0	2.08	14.7
20	15 43.8	15 37.7	57 37.2	1.86	57 14.7	1.89	14 0.9	2.00	15.7
21	15 31.5	15 25.3	56 51.9	1.89	56 29.4	1.85	14 48.2	1.95	16.7
22	15 19.4	15 13.7	56 7.6	1.78	55 46.8	1.67	15 34.4	1.91	17.7
23	15 8.5	15 3.7	55 27.5	1.54	55 10.0	1.30	16 20.1	1.90	18.7
24	14 59.5	14 55.9	54 54.5	1.20	54 41.2	1.01	17 5.8	1.91	19.7
25	14 52.9	14 50.6	54 30.4	0.80	54 22.0	0.59	17 52.0	1.93	20.7
26	14 49.1	14 48.3	54 16.3	-0.37	54 13.2	-0.14	18 38.7	1.96	21.7
27	14 48.1	14 48.7	54 12.8	+0.07	54 15.0	+0.29	19 25.9	1.98	22.7
28	14 50.0	14 52.0	54 19.7	0.50	54 26.8	0.69	20 13.7	2.00	23.7
29	14 54.5	14 57.7	54 36.2	+0.87	54 47.7	+1.04	21 1.9	2.01	24.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	18 22 45.03	2.1080	S. 18° 18' 2.7	0.867	0	20 4 11.66	2.1187	S. 16° 6' 53.1	6.787
1	18 24 51.23	2.1087	18 17 20.1	0.738	1	20 6 18.60	2.1188	16 2 5.3	6.828
2	18 26 57.48	2.1046	18 16 32.3	0.840	2	20 8 25.52	2.1192	15 57 12.6	6.919
3	18 29 3.77	2.1042	18 15 39.3	0.926	3	20 10 32.43	2.1190	15 52 15.1	6.969
4	18 31 10.10	2.1040	18 14 41.1	1.013	4	20 12 39.32	2.1147	15 47 12.7	6.979
5	18 33 16.48	2.1086	18 13 37.7	1.100	5	20 14 46.20	2.1145	15 42 5.6	6.189
6	18 35 22.90	2.1078	18 12 29.2	1.186	6	20 16 53.06	2.1142	15 36 53.7	6.228
7	18 37 29.35	2.1079	18 11 15.4	1.273	7	20 18 59.90	2.1138	15 31 37.1	6.217
8	18 39 35.85	2.1086	18 9 56.4	1.360	8	20 21 6.72	2.1134	15 26 15.7	6.266
9	18 41 42.38	2.1092	18 8 32.3	1.446	9	20 23 13.52	2.1133	15 20 49.6	6.474
10	18 43 48.95	2.1097	18 7 2.9	1.533	10	20 25 20.30	2.1128	15 15 18.8	6.562
11	18 45 55.55	2.1102	18 5 28.4	1.619	11	20 27 27.06	2.1126	15 9 43.3	6.630
12	18 48 2.18	2.1107	18 3 48.6	1.706	12	20 29 33.80	2.1122	15 4 3.2	6.707
13	18 50 8.84	2.1113	18 2 3.6	1.793	13	20 31 40.52	2.1117	14 58 18.5	6.784
14	18 52 15.54	2.1118	18 0 13.5	1.879	14	20 33 47.21	2.1113	14 52 29.2	6.860
15	18 54 22.26	2.1123	17 58 18.1	1.966	15	20 35 53.88	2.1109	14 46 35.3	6.936
16	18 56 29.01	2.1127	17 56 17.5	2.053	16	20 38 0.52	2.1106	14 40 36.8	6.912
17	18 58 35.79	2.1133	17 54 11.8	2.139	17	20 40 7.14	2.1101	14 34 33.8	6.987
18	19 0 42.60	2.1136	17 52 0.9	2.226	18	20 42 13.73	2.1097	14 28 26.3	6.103
19	19 2 49.42	2.1138	17 49 44.8	2.312	19	20 44 20.30	2.1092	14 22 14.3	6.237
20	19 4 56.26	2.1143	17 47 23.5	2.398	20	20 46 26.84	2.1088	14 15 57.9	6.311
21	19 7 3.13	2.1146	17 44 57.0	2.485	21	20 48 33.36	2.1083	14 9 37.1	6.384
22	19 9 10.01	2.1149	17 42 25.3	2.571	22	20 50 39.84	2.1078	14 3 11.8	6.457
23	19 11 16.92	2.1152	S. 17° 39' 48.5	2.657	23	20 52 46.30	2.1074	S. 13° 56' 42.2	6.530
SATURDAY 2.					MONDAY 4.				
0	19 13 23.84	2.1155	S. 17° 37' 6.5	2.743	0	20 54 52.73	2.1069	S. 13° 50' 8.2	6.603
1	19 15 30.78	2.1157	17 34 19.4	2.828	1	20 56 59.13	2.1064	13 43 29.9	6.674
2	19 17 37.73	2.1160	17 31 27.1	2.914	2	20 59 5.50	2.1060	13 36 47.4	6.746
3	19 19 44.69	2.1161	17 28 29.7	3.000	3	21 1 11.85	2.1056	13 30 0.6	6.816
4	19 21 51.66	2.1163	17 25 27.1	3.086	4	21 3 18.16	2.1050	13 23 9.6	6.886
5	19 23 58.65	2.1166	17 22 19.4	3.171	5	21 5 24.45	2.1046	13 16 14.3	6.956
6	19 26 5.64	2.1166	17 19 6.6	3.256	6	21 7 30.71	2.1040	13 9 14.9	7.025
7	19 28 12.64	2.1167	17 15 48.7	3.341	7	21 9 36.93	2.1036	13 2 11.3	7.093
8	19 30 19.65	2.1168	17 12 25.7	3.426	8	21 11 43.13	2.1031	12 55 3.7	7.161
9	19 32 26.66	2.1169	17 8 57.6	3.511	9	21 13 49.30	2.1026	12 47 52.0	7.229
10	19 34 33.68	2.1170	17 5 24.4	3.596	10	21 15 55.43	2.1020	12 40 36.2	7.296
11	19 36 40.70	2.1170	17 1 46.1	3.680	11	21 18 1.54	2.1016	12 33 16.4	7.363
12	19 38 47.72	2.1170	16 58 2.8	3.764	12	21 20 7.62	2.1011	12 25 52.5	7.429
13	19 40 54.74	2.1170	16 54 14.4	3.848	13	21 22 13.67	2.1006	12 18 24.8	7.496
14	19 43 1.76	2.1170	16 50 21.0	3.932	14	21 24 19.69	2.1001	12 10 53.2	7.560
15	19 45 8.78	2.1169	16 46 22.6	4.016	15	21 26 25.68	2.0996	12 3 17.7	7.624
16	19 47 15.79	2.1169	16 42 19.1	4.099	16	21 28 31.64	2.0991	11 55 38.3	7.687
17	19 49 22.81	2.1168	16 38 10.7	4.183	17	21 30 37.57	2.0986	11 47 55.2	7.751
18	19 51 29.81	2.1167	16 33 57.3	4.266	18	21 32 43.47	2.0982	11 40 8.3	7.813
19	19 53 36.80	2.1166	16 29 38.9	4.348	19	21 34 49.35	2.0977	11 32 17.6	7.874
20	19 55 43.80	2.1165	16 25 15.6	4.430	20	21 36 55.19	2.0973	11 24 23.2	7.937
21	19 57 50.78	2.1163	16 20 47.4	4.513	21	21 39 1.01	2.0967	11 16 25.2	7.997
22	19 59 57.75	2.1161	16 16 14.2	4.594	22	21 41 6.80	2.0962	11 8 23.5	8.066
23	20 2 4.71	2.1160	16 11 36.1	4.676	23	21 43 12.56	2.0956	11 0 18.2	8.118
24	20 4 11.66	2.1157	S. 16° 6' 53.1	4.757	24	21 45 18.30	2.0954	S. 10° 52' 9.3	8.177

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	^h 21 ^m 45 ^s 18.30	2.0944	S. 10° 52' 9.3"	8.177	0	^h 23 ^m 25 ^s 39.91	2.0945	S. 3° 24' 42.0"	10.183
1	21 47 24.01	2.0950	10 43 56.9	8.236	1	23 27 45.60	2.0952	3 14 30.3	10.206
2	21 49 29.70	2.0946	10 35 41.1	8.298	2	23 29 51.33	2.0956	3 4 17.3	10.228
3	21 51 35.36	2.0941	10 27 21.8	8.360	3	23 31 57.09	2.0964	2 54 3.0	10.249
4	21 53 40.99	2.0937	10 18 59.1	8.406	4	23 34 2.90	2.0971	2 43 47.4	10.269
5	21 55 46.60	2.0933	10 10 33.0	8.463	5	23 36 8.75	2.0978	2 33 30.7	10.289
6	21 57 52.19	2.0930	10 2 3.6	8.517	6	23 38 14.64	2.0986	2 23 12.8	10.307
7	21 59 57.76	2.0927	9 53 30.9	8.572	7	23 40 20.58	2.0994	2 12 53.8	10.325
8	22 2 3.31	2.0923	9 44 55.0	8.626	8	23 42 26.57	2.1003	2 2 33.8	10.342
9	22 4 8.84	2.0919	9 36 15.9	8.679	9	23 44 32.61	2.1012	1 52 12.8	10.366
10	22 6 14.34	2.0915	9 27 33.6	8.731	10	23 46 38.71	2.1021	1 41 50.9	10.373
11	22 8 19.82	2.0912	9 18 48.2	8.783	11	23 48 44.86	2.1030	1 31 28.1	10.387
12	22 10 25.29	2.0910	9 9 59.6	8.834	12	23 50 51.07	2.1040	1 21 4.4	10.401
13	22 12 30.74	2.0907	9 1 8.0	8.885	13	23 52 57.34	2.1050	1 10 40.0	10.413
14	22 14 36.17	2.0904	8 52 13.4	8.934	14	23 55 3.67	2.1060	1 0 14.8	10.425
15	22 16 41.59	2.0902	8 43 15.9	8.983	15	23 57 10.06	2.1071	0 49 49.0	10.436
16	22 18 47.00	2.0900	8 34 15.4	9.033	16	23 59 16.52	2.1082	0 39 22.5	10.445
17	22 20 52.39	2.0897	8 25 12.1	9.080	17	0 1 23.05	2.1094	0 28 55.5	10.464
18	22 22 57.77	2.0895	8 16 5.9	9.126	18	0 3 29.65	2.1106	0 18 28.0	10.483
19	22 25 3.14	2.0893	8 6 56.9	9.173	19	0 5 36.32	2.1118	S. 0 8 0.0	10.470
20	22 27 8.49	2.0892	7 57 45.2	9.218	20	0 7 43.07	2.1132	N. 0 2 28.4	10.476
21	22 29 13.84	2.0891	7 48 30.7	9.263	21	0 9 49.90	2.1144	0 12 57.1	10.482
22	22 31 19.18	2.0889	7 39 13.6	9.307	22	0 11 56.80	2.1157	0 23 26.2	10.486
23	22 33 24.51	2.0888	S. 7 29 53.8	9.350	23	0 14 3.79	2.1172	N. 0 33 55.5	10.490
WEDNESDAY 6.					FRIDAY, 8.				
0	22 35 29.84	2.0887	S. 7 20 31.5	9.393	0	0 16 10.86	2.1186	N. 0 44 25.0	10.493
1	22 37 35.16	2.0887	7 11 6.6	9.435	1	0 18 18.02	2.1200	0 54 54.6	10.494
2	22 39 40.48	2.0887	7 1 39.3	9.476	2	0 20 25.26	2.1215	1 5 24.3	10.495
3	22 41 45.80	2.0887	6 52 9.5	9.516	3	0 22 32.60	2.1231	1 15 54.1	10.496
4	22 43 51.12	2.0887	6 42 37.3	9.556	4	0 24 40.03	2.1247	1 26 23.8	10.494
5	22 45 56.44	2.0886	6 33 2.8	9.595	5	0 26 47.56	2.1263	1 36 53.4	10.493
6	22 48 1.77	2.0886	6 23 26.0	9.633	6	0 28 55.18	2.1279	1 47 22.9	10.490
7	22 50 7.10	2.0885	6 13 46.9	9.670	7	0 31 2.91	2.1296	1 57 52.2	10.486
8	22 52 12.43	2.0889	6 4 5.6	9.707	8	0 33 10.74	2.1313	2 8 21.3	10.483
9	22 54 17.78	2.0891	5 54 22.1	9.743	9	0 35 18.67	2.1331	2 18 50.1	10.476
10	22 56 23.13	2.0892	5 44 36.5	9.777	10	0 37 26.71	2.1349	2 29 18.5	10.470
11	22 58 28.49	2.0893	5 34 48.8	9.812	11	0 39 34.86	2.1367	2 39 46.5	10.462
12	23 0 33.86	2.0896	5 24 59.1	9.845	12	0 41 43.12	2.1386	2 50 14.0	10.454
13	23 2 39.25	2.0899	5 15 7.4	9.877	13	0 43 51.49	2.1406	3 0 41.0	10.445
14	23 4 44.65	2.0902	5 5 13.8	9.909	14	0 45 59.99	2.1426	3 11 7.4	10.434
15	23 6 50.07	2.0905	4 55 18.3	9.940	15	0 48 8.60	2.1446	3 21 33.2	10.423
16	23 8 55.51	2.0908	4 45 21.0	9.971	16	0 50 17.33	2.1466	3 31 58.2	10.411
17	23 11 0.97	2.0912	4 35 21.9	10.000	17	0 52 26.19	2.1487	3 42 22.5	10.398
18	23 13 6.45	2.0916	4 25 21.0	10.028	18	0 54 35.17	2.1508	3 52 46.0	10.384
19	23 15 11.96	2.0920	4 15 18.4	10.056	19	0 56 44.28	2.1529	4 3 8.6	10.369
20	23 17 17.49	2.0924	4 5 14.2	10.083	20	0 58 53.52	2.1551	4 13 30.3	10.361
21	23 19 23.05	2.0929	3 55 8.4	10.110	21	1 1 2.90	2.1574	4 23 51.0	10.336
22	23 21 28.64	2.0934	3 45 1.1	10.136	22	1 3 12.41	2.1598	4 34 10.6	10.316
23	23 23 34.26	2.0939	3 34 52.3	10.169	23	1 5 22.05	2.1619	4 44 29.1	10.299
24	23 25 39.91	2.0945	S. 3 24 42.0	10.193	24	1 7 31.84	2.1643	N. 4 54 46.4	10.279

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	1 7 31.84	2.1648	N. 4 54 46.4	10.279	0	2 54 46.15	2.3147	N. 12 26 13.5	6.138
1	1 9 41.77	2.1667	5 5 2.5	10.288	1	2 57 5.14	2.3184	12 34 19.7	6.088
2	1 11 51.84	2.1691	5 15 17.4	10.296	2	2 59 24.36	2.3221	12 42 21.6	7.997
3	1 14 2.06	2.1716	5 25 30.9	10.214	3	3 1 43.80	2.3268	12 50 19.3	7.926
4	1 16 12.43	2.1741	5 35 43.0	10.190	4	3 4 3.46	2.3296	12 58 12.6	7.862
5	1 18 22.95	2.1766	5 45 53.7	10.165	5	3 6 23.34	2.3322	13 6 1.5	7.778
6	1 20 33.62	2.1791	5 56 2.8	10.139	6	3 8 43.44	2.3369	13 13 46.0	7.708
7	1 22 44.44	2.1817	6 6 10.4	10.112	7	3 11 3.76	2.3406	13 21 25.9	7.627
8	1 24 55.42	2.1844	6 16 16.3	10.084	8	3 13 24.31	2.3443	13 29 1.2	7.560
9	1 27 6.57	2.1872	6 26 20.5	10.066	9	3 15 45.08	2.3481	13 36 31.9	7.473
10	1 29 17.88	2.1899	6 36 23.0	10.036	10	3 18 6.08	2.3518	13 43 57.9	7.383
11	1 31 29.35	2.1926	6 46 23.6	9.995	11	3 20 27.30	2.3555	13 51 19.1	7.313
12	1 33 40.99	2.1953	6 56 22.4	9.963	12	3 22 48.74	2.3592	13 58 35.5	7.233
13	1 35 52.79	2.1982	7 6 19.2	9.931	13	3 25 10.40	2.3629	14 5 47.0	7.150
14	1 38 4.77	2.2011	7 16 14.1	9.897	14	3 27 32.29	2.3666	14 12 53.5	7.067
15	1 40 16.92	2.2040	7 26 6.9	9.863	15	3 29 54.40	2.3703	14 19 55.0	6.983
16	1 42 29.25	2.2069	7 35 57.6	9.826	16	3 32 16.73	2.3740	14 26 51.4	6.898
17	1 44 41.75	2.2098	7 45 46.1	9.790	17	3 34 39.28	2.3777	14 33 42.7	6.812
18	1 46 54.42	2.2128	7 55 32.4	9.752	18	3 37 2.05	2.3813	14 40 28.8	6.726
19	1 49 7.28	2.2158	8 5 16.4	9.713	19	3 39 25.04	2.3850	14 47 9.7	6.637
20	1 51 20.32	2.2189	8 14 58.0	9.673	20	3 41 48.25	2.3887	14 53 45.3	6.549
21	1 53 33.55	2.2220	8 24 37.2	9.632	21	3 44 11.68	2.3923	15 0 15.5	6.458
22	1 55 46.96	2.2251	8 34 13.9	9.590	22	3 46 35.33	2.3959	15 6 40.3	6.367
23	1 58 0.56	2.2282	N. 8 43 48.0	9.547	23	3 48 59.19	2.3996	N. 15 12 59.6	6.276
SUNDAY 10.					TUESDAY 12.				
0	2 0 14.35	2.2314	N. 8 53 19.5	9.504	0	3 51 23.27	2.4031	N. 15 19 13.4	6.183
1	2 2 28.33	2.2346	9 2 48.4	9.469	1	3 53 47.56	2.4067	15 25 21.6	6.089
2	2 4 42.50	2.2378	9 12 14.5	9.413	2	3 56 12.07	2.4102	15 31 24.1	5.996
3	2 6 56.87	2.2411	9 21 37.9	9.366	3	3 58 36.79	2.4137	15 37 20.9	5.899
4	2 9 11.44	2.2444	9 30 58.4	9.317	4	4 1 1.72	2.4173	15 43 12.0	5.803
5	2 11 26.20	2.2477	9 40 16.0	9.268	5	4 3 26.85	2.4207	15 48 57.3	5.708
6	2 13 41.16	2.2511	9 49 30.6	9.218	6	4 5 52.20	2.4243	15 54 36.7	5.607
7	2 15 56.33	2.2544	9 58 42.2	9.167	7	4 8 17.75	2.4276	16 0 10.2	5.508
8	2 18 11.69	2.2578	10 7 50.6	9.115	8	4 10 43.50	2.4308	16 5 37.7	5.408
9	2 20 27.26	2.2612	10 16 55.9	9.062	9	4 13 9.45	2.4342	16 10 59.2	5.307
10	2 22 43.04	2.2647	10 25 58.0	9.007	10	4 15 35.61	2.4376	16 16 14.6	5.206
11	2 24 59.02	2.2681	10 34 56.8	8.952	11	4 18 1.96	2.4408	16 21 23.9	5.103
12	2 27 15.21	2.2716	10 43 52.3	8.896	12	4 20 28.51	2.4441	16 26 27.0	5.000
13	2 29 31.61	2.2751	10 52 44.3	8.839	13	4 22 55.25	2.4473	16 31 23.9	4.896
14	2 31 48.22	2.2786	11 1 32.9	8.780	14	4 25 22.18	2.4505	16 36 14.5	4.791
15	2 34 5.04	2.2822	11 10 17.9	8.720	15	4 27 49.31	2.4537	16 40 58.8	4.686
16	2 36 22.08	2.2858	11 18 59.3	8.660	16	4 30 16.62	2.4567	16 45 36.7	4.578
17	2 38 39.33	2.2893	11 27 37.1	8.598	17	4 32 44.11	2.4597	16 50 8.2	4.471
18	2 40 56.79	2.2928	11 36 11.1	8.536	18	4 35 11.78	2.4627	16 54 33.2	4.363
19	2 43 14.47	2.2965	11 44 41.3	8.473	19	4 37 39.63	2.4657	16 58 51.7	4.254
20	2 45 32.37	2.3002	11 53 7.7	8.407	20	4 40 7.66	2.4687	17 3 3.7	4.145
21	2 47 50.49	2.3038	12 1 30.2	8.341	21	4 42 35.87	2.4716	17 7 9.1	4.034
22	2 50 8.82	2.3074	12 9 48.7	8.275	22	4 45 4.25	2.4743	17 11 7.9	3.923
23	2 52 27.38	2.3111	12 18 3.1	8.207	23	4 47 32.78	2.4770	17 15 0.0	3.813
24	2 54 46.15	2.3147	N. 12 26 13.5	8.138	24	4 50 1.49	2.4796	N. 17 18 45.3	3.699

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	^h 4 ^m 50 ^s 1.49	2.4798	N.17° 18' 45.3"	2.009	0	^h 6 ^m 50 ^s 55.94	2.5291	N.17° 58' 4.7"	2.145
1	4 52 30.36	2.4894	17 22 23.9	2.586	1	6 53 27.66	2.5292	17 55 52.3	2.267
2	4 54 59.38	2.4886	17 25 55.7	2.473	2	6 55 59.32	2.5271	17 53 32.6	2.300
3	4 57 28.56	2.4878	17 29 20.6	2.368	3	6 58 30.91	2.5260	17 51 5.6	2.512
4	4 59 57.90	2.4901	17 32 38.6	2.243	4	7 1 2.44	2.5249	17 48 31.2	2.633
5	5 2 27.38	2.4928	17 35 49.7	2.128	5	7 3 33.90	2.5237	17 45 49.6	2.754
6	5 4 57.00	2.4948	17 38 53.9	2.011	6	7 6 5.29	2.5224	17 43 0.7	2.876
7	5 7 26.76	2.4973	17 41 51.1	2.885	7	7 8 36.59	2.5210	17 40 4.6	2.996
8	5 9 56.66	2.4996	17 44 41.3	2.778	8	7 11 7.81	2.5196	17 37 1.3	3.116
9	5 12 26.70	2.5017	17 47 24.4	2.660	9	7 13 38.94	2.5180	17 33 50.8	3.236
10	5 14 56.87	2.5038	17 50 0.5	2.541	10	7 16 9.97	2.5164	17 30 33.2	3.353
11	5 17 27.16	2.5068	17 52 29.4	2.423	11	7 18 40.91	2.5147	17 27 8.4	3.473
12	5 19 57.57	2.5078	17 54 51.9	2.303	12	7 21 11.74	2.5139	17 23 36.5	3.590
13	5 22 28.10	2.5097	17 57 5.8	2.183	13	7 23 42.46	2.5111	17 19 57.6	3.707
14	5 24 58.74	2.5116	17 59 13.2	2.063	14	7 26 13.08	2.5092	17 16 11.7	3.824
15	5 27 29.49	2.5134	18 1 13.4	1.942	15	7 28 43.57	2.5072	17 12 18.8	3.940
16	5 30 0.35	2.5152	18 3 6.3	1.821	16	7 31 13.94	2.5062	17 8 19.0	4.056
17	5 32 31.31	2.5168	18 4 51.9	1.700	17	7 33 44.19	2.5031	17 4 12.3	4.169
18	5 35 2.36	2.5183	18 6 30.3	1.578	18	7 36 14.31	2.5008	16 59 58.7	4.282
19	5 37 33.51	2.5199	18 8 1.3	1.456	19	7 38 44.29	2.4986	16 55 38.3	4.396
20	5 40 4.75	2.5213	18 9 24.9	1.334	20	7 41 14.14	2.4963	16 51 11.1	4.509
21	5 42 36.07	2.5226	18 10 41.2	1.211	21	7 43 43.85	2.4939	16 46 37.2	4.621
22	5 45 7.47	2.5239	18 11 50.2	1.088	22	7 46 13.41	2.4914	16 41 56.6	4.733
23	5 47 38.94	2.5261	N.18 12 51.8	0.964	23	7 48 42.82	2.4890	N.16 37 9.3	4.845
THURSDAY 14.					SATURDAY 16.				
0	5 50 10.48	2.5269	N.18 13 46.0	0.841	0	7 51 12.08	2.4882	N.16 32 15.4	4.952
1	5 52 42.09	2.5272	18 14 32.7	0.717	1	7 53 41.18	2.4887	16 27 15.0	5.061
2	5 55 13.76	2.5299	18 15 12.0	0.593	2	7 56 10.12	2.4810	16 22 8.1	5.169
3	5 57 45.48	2.5291	18 15 43.8	0.468	3	7 58 38.90	2.4782	16 16 54.7	5.277
4	6 0 17.25	2.5299	18 16 8.2	0.344	4	8 1 7.51	2.4764	16 11 34.9	5.383
5	6 2 49.07	2.5307	18 16 25.1	0.220	5	8 3 35.95	2.4728	16 6 8.7	5.489
6	6 5 20.93	2.5313	18 16 34.5	0.096	6	8 6 4.21	2.4696	16 0 36.2	5.593
7	6 7 52.83	2.5319	18 16 36.5	0.030	7	8 8 32.30	2.4667	15 54 57.5	5.697
8	6 10 24.76	2.5324	18 16 31.0	0.185	8	8 11 0.21	2.4636	15 49 12.6	5.800
9	6 12 56.72	2.5328	18 16 18.0	0.279	9	8 13 27.93	2.4604	15 43 21.5	5.902
10	6 15 28.70	2.5331	18 15 57.5	0.404	10	8 15 55.46	2.4573	15 37 24.4	6.003
11	6 18 0.69	2.5333	18 15 29.5	0.529	11	8 18 22.81	2.4542	15 31 21.2	6.103
12	6 20 32.70	2.5336	18 14 53.9	0.654	12	8 20 49.96	2.4509	15 25 12.0	6.203
13	6 23 4.71	2.5338	18 14 10.9	0.780	13	8 23 16.92	2.4476	15 18 56.9	6.300
14	6 25 36.73	2.5336	18 13 20.4	0.905	14	8 25 43.67	2.4442	15 12 36.0	6.397
15	6 28 8.75	2.5336	18 12 22.4	1.029	15	8 28 10.23	2.4409	15 6 9.3	6.493
16	6 30 40.75	2.5333	18 11 16.9	1.154	16	8 30 36.58	2.4375	14 59 36.9	6.588
17	6 33 12.74	2.5331	18 10 3.9	1.278	17	8 33 2.73	2.4341	14 52 58.8	6.683
18	6 35 44.72	2.5328	18 8 43.5	1.403	18	8 35 28.67	2.4306	14 46 15.1	6.776
19	6 38 16.68	2.5324	18 7 15.6	1.527	19	8 37 54.40	2.4270	14 39 25.8	6.868
20	6 40 48.61	2.5318	18 5 40.3	1.651	20	8 40 19.91	2.4234	14 32 31.1	6.957
21	6 43 20.50	2.5313	18 3 57.5	1.774	21	8 42 45.21	2.4199	14 25 31.0	7.047
22	6 45 52.36	2.5306	18 2 7.3	1.898	22	8 45 10.30	2.4163	14 18 25.5	7.136
23	6 48 24.17	2.5298	18 0 9.7	2.022	23	8 47 35.16	2.4126	14 11 14.7	7.223
24	6 50 55.94	2.5291	N.17 58 4.7	2.145	24	8 49 59.80	2.4088	N.14 3 58.7	7.309

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	h m s	s	N. 14° 3' 58.7"	7.309	0	h m s	s	N. 6° 55' 58.5"	10.061
1	8 49 59.80	2.4088	13 56 37.6	7.396	1	10 41 4.51	2.2194	6 45 54.0	10.069
2	8 52 24.22	2.4051	13 49 11.4	7.479	2	10 43 17.56	2.2187	6 35 47.8	10.116
3	8 54 48.41	2.4013	13 41 40.2	7.562	3	10 45 30.39	2.2180	6 25 40.0	10.142
4	8 57 12.38	2.3976	13 34 4.0	7.644	4	10 47 43.00	2.2068	6 15 30.7	10.166
5	8 59 36.12	2.3937	13 26 22.9	7.724	5	10 49 55.39	2.2046	6 5 20.0	10.190
6	9 1 59.62	2.3898	13 18 37.0	7.804	6	10 52 7.55	2.2009	5 55 7.9	10.212
7	9 4 22.89	2.3860	13 10 46.4	7.882	7	10 54 19.50	2.1974	5 44 54.5	10.233
8	9 6 45.94	2.3823	13 2 51.2	7.969	8	10 56 31.24	2.1938	5 34 39.9	10.258
9	9 9 8.76	2.3783	12 54 51.3	8.035	9	10 58 42.76	2.1903	5 24 24.1	10.272
10	9 11 31.34	2.3743	12 46 46.9	8.110	10	11 0 54.06	2.1867	5 14 7.2	10.290
11	9 13 53.68	2.3708	12 38 38.0	8.184	11	11 3 5.16	2.1832	5 3 49.3	10.307
12	9 16 15.78	2.3664	12 30 24.8	8.266	12	11 5 16.04	2.1797	4 53 30.4	10.322
13	9 18 37.65	2.3626	12 22 7.3	8.328	13	11 7 26.72	2.1762	4 43 10.6	10.337
14	9 20 59.28	2.3588	12 13 45.5	8.398	14	11 9 37.19	2.1728	4 32 49.9	10.351
15	9 23 20.67	2.3544	12 5 19.5	8.467	15	11 11 47.46	2.1694	4 22 28.5	10.363
16	9 25 41.81	2.3504	11 56 49.4	8.535	16	11 13 57.52	2.1661	4 12 6.3	10.375
17	9 28 2.72	2.3466	11 48 15.3	8.601	17	11 16 7.39	2.1627	4 1 43.5	10.386
18	9 30 23.39	2.3424	11 39 37.3	8.666	18	11 18 17.05	2.1594	3 51 20.1	10.394
19	9 32 43.81	2.3383	11 30 55.4	8.730	19	11 20 26.52	2.1562	3 40 56.2	10.408
20	9 35 3.99	2.3343	11 22 9.7	8.793	20	11 22 35.79	2.1529	3 30 31.8	10.410
21	9 37 23.93	2.3302	11 13 20.2	8.855	21	11 24 44.87	2.1497	3 20 7.0	10.416
22	9 39 43.02	2.3262	11 4 27.0	8.918	22	11 26 53.76	2.1466	3 9 41.9	10.421
23	9 42 3.08	2.3223	N. 10° 55' 30.3"	8.975	23	11 29 2.46	2.1434	N. 2° 59' 16.5"	10.425
24	9 44 22.29	2.3182				11 31 10.97	2.1403		
MONDAY 18.					WEDNESDAY 20.				
0	9 46 41.26	2.3141	N. 10° 46' 30.0"	9.038	0	11 33 19.30	2.1373	N. 2° 48' 50.8"	10.429
1	9 48 59.98	2.3100	10 37 26.3	9.090	1	11 35 27.44	2.1342	2 38 25.0	10.431
2	9 51 18.46	2.3060	10 28 19.2	9.145	2	11 37 35.41	2.1312	2 27 59.1	10.433
3	9 53 36.70	2.3020	10 19 8.8	9.200	3	11 39 43.19	2.1283	2 17 33.1	10.432
4	9 55 54.70	2.2979	10 9 55.2	9.253	4	11 41 50.80	2.1254	2 7 7.2	10.431
5	9 58 12.45	2.2938	10 0 38.5	9.305	5	11 43 58.24	2.1226	1 56 41.3	10.430
6	10 0 29.96	2.2898	9 51 18.7	9.356	6	11 46 5.50	2.1196	1 46 15.6	10.428
7	10 2 47.23	2.2858	9 41 55.9	9.406	7	11 48 12.59	2.1167	1 35 50.0	10.424
8	10 5 4.26	2.2817	9 32 30.1	9.453	8	11 50 19.51	2.1140	1 25 24.7	10.419
9	10 7 21.04	2.2777	9 23 1.5	9.500	9	11 52 26.27	2.1113	1 14 59.7	10.414
10	10 9 37.59	2.2736	9 13 30.1	9.546	10	11 54 32.86	2.1086	1 4 35.0	10.408
11	10 11 53.90	2.2696	9 3 56.0	9.591	11	11 56 39.30	2.1069	0 54 10.8	10.400
12	10 14 9.97	2.2656	8 54 19.2	9.634	12	11 58 45.57	2.1083	0 43 47.0	10.392
13	10 16 25.80	2.2619	8 44 39.9	9.676	13	12 0 51.69	2.1007	0 33 23.7	10.383
14	10 18 41.40	2.2580	8 34 58.1	9.717	14	12 2 57.65	2.0980	0 23 1.0	10.373
15	10 20 56.76	2.2540	8 25 13.9	9.757	15	12 5 3.45	2.0955	0 12 38.9	10.363
16	10 23 11.88	2.2500	8 15 27.3	9.796	16	12 7 9.11	2.0931	N. 0° 2' 17.5"	10.350
17	10 25 26.76	2.2463	8 5 38.4	9.833	17	12 9 14.62	2.0906	S. 0° 8' 3.1"	10.337
18	10 27 41.42	2.2423	7 55 47.3	9.869	18	12 11 19.98	2.0882	0 18 23.0	10.324
19	10 29 55.84	2.2384	7 45 54.1	9.904	19	12 13 25.20	2.0858	0 28 42.0	10.310
20	10 32 10.03	2.2346	7 35 58.9	9.938	20	12 15 30.28	2.0835	0 39 0.1	10.296
21	10 34 23.99	2.2308	7 26 1.6	9.970	21	12 17 35.22	2.0812	0 49 17.3	10.279
22	10 36 37.73	2.2270	7 16 2.4	10.002	22	12 19 40.02	2.0789	0 59 33.5	10.262
23	10 38 51.23	2.2232	7 6 1.3	10.032	23	12 21 44.69	2.0767	1 9 48.7	10.244
24	10 41 4.51	2.2194	N. 6° 55' 58.5"	10.061	24	12 23 49.23	2.0746	S. 1° 20' 2.8"	10.226

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	12 23 49.23	2.0746	S. 1° 20' 2.8"	10.226	0	14 1 35.39	2.0181	S. 8° 56' 2.3"	8.530
1	12 25 53.64	2.0734	1 30 15.8	10.207	1	14 3 36.16	2.0126	9 4 32.6	8.481
2	12 27 57.92	2.0709	1 40 27.6	10.187	2	14 5 36.90	2.0122	9 13 0.0	8.431
3	12 30 2.07	2.0692	1 50 38.2	10.166	3	14 7 37.62	2.0117	9 21 24.3	8.380
4	12 32 6.10	2.0662	2 0 47.5	10.144	4	14 9 38.31	2.0114	9 29 45.6	8.329
5	12 34 10.01	2.0642	2 10 55.5	10.122	5	14 11 38.99	2.0112	9 38 3.8	8.278
6	12 36 13.80	2.0622	2 21 2.1	10.099	6	14 13 39.65	2.0108	9 46 18.9	8.226
7	12 38 17.47	2.0608	2 31 7.3	10.075	7	14 15 40.29	2.0106	9 54 30.9	8.173
8	12 40 21.03	2.0594	2 41 11.1	10.050	8	14 17 40.92	2.0104	10 2 39.7	8.120
9	12 42 24.48	2.0566	2 51 13.4	10.025	9	14 19 41.54	2.0102	10 10 45.3	8.067
10	12 44 27.82	2.0548	3 1 14.1	9.999	10	14 21 42.15	2.0100	10 18 47.7	8.013
11	12 46 31.05	2.0530	3 11 13.3	9.973	11	14 23 42.74	2.0098	10 26 46.9	7.959
12	12 48 34.18	2.0513	3 21 10.8	9.945	12	14 25 43.33	2.0097	10 34 42.8	7.904
13	12 50 37.20	2.0496	3 31 6.6	9.916	13	14 27 43.91	2.0097	10 42 35.4	7.849
14	12 52 40.13	2.0479	3 41 0.7	9.887	14	14 29 44.49	2.0097	10 50 24.7	7.793
15	12 54 42.95	2.0463	8 50 53.1	9.858	15	14 31 45.07	2.0097	10 58 10.6	7.737
16	12 56 45.68	2.0447	4 0 43.7	9.827	16	14 33 45.65	2.0097	11 5 53.1	7.681
17	12 58 48.32	2.0432	4 10 32.4	9.796	17	14 35 46.23	2.0097	11 13 32.3	7.624
18	13 0 50.86	2.0417	4 20 19.2	9.765	18	14 37 46.81	2.0098	11 21 8.0	7.567
19	13 2 53.32	2.0403	4 30 4.1	9.732	19	14 39 47.40	2.0098	11 28 40.3	7.509
20	13 4 55.69	2.0387	4 39 47.0	9.699	20	14 41 47.99	2.0099	11 36 9.1	7.451
21	13 6 57.97	2.0373	4 49 28.0	9.665	21	14 43 48.50	2.0100	11 43 34.4	7.392
22	13 9 0.17	2.0360	4 59 6.9	9.631	22	14 45 49.19	2.0101	11 50 56.2	7.333
23	13 11 2.29	2.0347	S. 5 8 43.7	9.596	23	14 47 49.80	2.0103	S. 11 58 14.4	7.274
FRIDAY 22.					SUNDAY 24.				
0	13 13 4.33	2.0334	S. 5 18 18.4	9.560	0	14 49 50.43	2.0106	S. 12 5 29.1	7.214
1	13 15 6.30	2.0322	5 27 51.0	9.524	1	14 51 51.07	2.0108	12 12 40.1	7.154
2	13 17 8.19	2.0309	5 37 21.3	9.487	2	14 53 51.72	2.0110	12 19 47.5	7.093
3	13 19 10.01	2.0297	5 46 49.4	9.450	3	14 55 52.39	2.0113	12 26 51.3	7.032
4	13 21 11.76	2.0286	5 56 15.3	9.411	4	14 57 53.08	2.0116	12 33 51.4	6.971
5	13 23 13.44	2.0273	6 5 38.8	9.373	5	14 59 53.78	2.0119	12 40 47.8	6.909
6	13 25 15.06	2.0266	6 15 0.0	9.333	6	15 1 54.51	2.0123	12 47 40.5	6.847
7	13 27 16.62	2.0264	6 24 18.8	9.294	7	15 3 55.27	2.0127	12 54 29.5	6.785
8	13 29 18.11	2.0243	6 33 35.2	9.253	8	15 5 56.04	2.0130	13 1 14.7	6.722
9	13 31 19.54	2.0234	6 42 49.2	9.212	9	15 7 56.83	2.0134	13 7 56.2	6.659
10	13 33 20.92	2.0226	6 52 0.7	9.170	10	15 9 57.65	2.0138	13 14 33.9	6.596
11	13 35 22.25	2.0217	7 1 9.6	9.128	11	15 11 58.49	2.0142	13 21 7.7	6.532
12	13 37 23.52	2.0208	7 10 16.0	9.086	12	15 13 59.36	2.0147	13 27 37.7	6.467
13	13 39 24.74	2.0199	7 19 19.8	9.043	13	15 16 0.26	2.0152	13 34 3.8	6.402
14	13 41 25.91	2.0192	7 28 21.0	8.998	14	15 18 1.19	2.0157	13 40 26.0	6.337
15	13 43 27.04	2.0184	7 37 19.6	8.954	15	15 20 2.15	2.0162	13 46 44.3	6.272
16	13 45 28.12	2.0176	7 46 15.5	8.909	16	15 22 3.14	2.0167	13 52 58.7	6.208
17	13 47 29.15	2.0169	7 55 8.7	8.863	17	15 24 4.16	2.0173	13 59 9.1	6.140
18	13 49 30.15	2.0163	8 3 59.1	8.817	18	15 26 5.22	2.0180	14 5 15.5	6.074
19	13 51 31.11	2.0157	8 12 46.8	8.771	19	15 28 6.32	2.0186	14 11 17.9	6.007
20	13 53 32.03	2.0151	8 21 31.6	8.724	20	15 30 7.45	2.0192	14 17 16.3	5.940
21	13 55 32.92	2.0145	8 30 13.6	8.678	21	15 32 8.61	2.0198	14 23 10.7	5.873
22	13 57 33.77	2.0139	8 38 52.7	8.632	22	15 34 9.82	2.0205	14 29 1.0	5.806
23	13 59 34.59	2.0138	8 47 29.0	8.580	23	15 36 11.07	2.0212	14 34 47.3	5.737
24	14 1 35.39	2.0131	S. 8 56 2.3	8.530	24	15 38 12.36	2.0218	S. 14 40 29.5	5.669

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	15 ^h 38 ^m 12.36 ^s	2.0218	S. 14° 40' 29.5"	5.000	0	17 ^h 16 ^m 14.01 ^s	2.0647	S. 17° 48' 12.7"	2.058
1	15 40 13.69	2.0225	14 46 7.5	5.000	1	17 18 17.92	2.0667	17 50 13.4	1.972
2	15 42 15.06	2.0232	14 51 41.4	5.581	2	17 20 21.89	2.0667	17 52 9.3	1.891
3	15 44 16.48	2.0240	14 57 11.2	5.461	3	17 22 25.92	2.0676	17 54 0.3	1.809
4	15 46 17.94	2.0247	15 2 36.8	5.392	4	17 24 30.00	2.0686	17 55 46.4	1.727
5	15 48 19.44	2.0254	15 7 58.2	5.322	5	17 26 34.14	2.0694	17 57 27.6	1.645
6	15 50 20.99	2.0262	15 13 15.4	5.261	6	17 28 38.33	2.0703	17 59 3.9	1.563
7	15 52 22.59	2.0270	15 18 28.4	5.181	7	17 30 42.58	2.0713	18 0 35.2	1.481
8	15 54 24.23	2.0278	15 23 37.1	5.110	8	17 32 46.89	2.0722	18 2 1.6	1.399
9	15 56 25.92	2.0286	15 28 41.5	5.039	9	17 34 51.25	2.0731	18 3 23.1	1.317
10	15 58 27.66	2.0294	15 33 41.7	4.967	10	17 36 55.66	2.0740	18 4 39.6	1.234
11	16 0 29.45	2.0302	15 38 37.6	4.896	11	17 39 0.13	2.0750	18 5 51.1	1.151
12	16 2 31.29	2.0311	15 43 29.2	4.822	12	17 41 4.66	2.0760	18 6 57.7	1.068
13	16 4 33.18	2.0319	15 48 16.4	4.751	13	17 43 9.24	2.0768	18 7 59.3	0.985
14	16 6 35.12	2.0327	15 52 59.3	4.678	14	17 45 13.87	2.0776	18 8 55.9	0.901
15	16 8 37.11	2.0336	15 57 37.8	4.605	15	17 47 18.55	2.0785	18 9 47.5	0.818
16	16 10 39.15	2.0344	16 2 11.9	4.532	16	17 49 23.29	2.0794	18 10 34.0	0.735
17	16 12 41.25	2.0354	16 6 41.6	4.458	17	17 51 28.08	2.0802	18 11 15.6	0.651
18	16 14 43.40	2.0363	16 11 6.9	4.384	18	17 53 32.92	2.0812	18 11 52.1	0.567
19	16 16 45.61	2.0372	16 15 27.8	4.311	19	17 55 37.82	2.0820	18 12 23.6	0.483
20	16 18 47.87	2.0381	16 19 44.2	4.236	20	17 57 42.76	2.0827	18 12 50.1	0.399
21	16 20 50.18	2.0389	16 23 56.1	4.162	21	17 59 47.75	2.0836	18 13 11.5	0.315
22	16 22 52.54	2.0398	16 28 3.6	4.087	22	18 1 52.79	2.0844	18 13 27.8	0.230
23	16 24 54.96	2.0408	S. 16° 32' 6.5"	4.011	23	18 3 57.88	2.0852	S. 18° 13' 39.1"	0.146
TUESDAY 26.					THURSDAY 28.				
0	16 26 57.44	2.0418	S. 16° 36' 4.9"	3.936	0	18 6 3.02	2.0861	S. 18° 13' 45.3"	0.063
1	16 28 59.97	2.0427	16 39 58.8	3.860	1	18 8 8.21	2.0868	18 13 46.5	0.023
2	16 31 2.56	2.0436	16 43 48.1	3.784	2	18 10 13.44	2.0876	18 13 42.6	0.108
3	16 33 5.20	2.0445	16 47 32.9	3.708	3	18 12 18.71	2.0882	18 13 33.6	0.192
4	16 35 7.90	2.0455	16 51 13.1	3.631	4	18 14 24.03	2.0891	18 13 19.5	0.277
5	16 37 10.66	2.0465	16 54 48.7	3.555	5	18 16 29.40	2.0900	18 13 0.3	0.362
6	16 39 13.48	2.0474	16 58 19.7	3.478	6	18 18 34.83	2.0908	18 12 36.0	0.447
7	16 41 16.35	2.0483	17 1 46.1	3.401	7	18 20 40.30	2.0914	18 12 6.6	0.532
8	16 43 19.28	2.0492	17 5 7.8	3.323	8	18 22 45.80	2.0919	18 11 32.1	0.617
9	16 45 22.26	2.0502	17 8 24.8	3.245	9	18 24 51.33	2.0926	18 10 52.5	0.702
10	16 47 25.31	2.0512	17 11 37.2	3.167	10	18 26 56.91	2.0933	18 10 7.8	0.788
11	16 49 28.41	2.0522	17 14 44.9	3.089	11	18 29 2.53	2.0940	18 9 18.0	0.873
12	16 51 31.57	2.0532	17 17 47.9	3.011	12	18 31 8.19	2.0947	18 8 23.1	0.958
13	16 53 34.79	2.0541	17 20 46.2	2.932	13	18 33 13.89	2.0953	18 7 23.1	1.044
14	16 55 38.06	2.0551	17 23 39.8	2.853	14	18 35 19.63	2.0959	18 6 17.9	1.129
15	16 57 41.40	2.0561	17 26 28.6	2.774	15	18 37 25.40	2.0966	18 5 7.6	1.215
16	16 59 44.79	2.0570	17 29 12.7	2.695	16	18 39 31.21	2.0973	18 3 52.1	1.300
17	17 1 48.24	2.0580	17 31 52.0	2.615	17	18 41 37.06	2.0978	18 2 31.5	1.386
18	17 3 51.75	2.0589	17 34 26.5	2.535	18	18 43 42.95	2.0986	18 1 5.8	1.471
19	17 5 55.31	2.0599	17 36 56.2	2.455	19	18 45 48.89	2.0992	17 59 35.0	1.557
20	17 7 58.94	2.0609	17 39 21.2	2.375	20	18 47 54.86	2.0997	17 57 59.0	1.643
21	17 10 2.66	2.0618	17 41 41.3	2.295	21	18 50 0.85	2.1001	17 56 17.9	1.728
22	17 12 6.32	2.0628	17 43 56.6	2.215	22	18 52 6.87	2.1006	17 54 31.7	1.813
23	17 14 10.16	2.0637	17 46 7.1	2.134	23	18 54 12.93	2.1012	17 52 40.3	1.898
24	17 16 14.01	2.0647	S. 17° 48' 12.7"	2.053	24	18 56 19.02	2.1017	S. 17° 50' 43.7"	1.983

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

PHASES OF THE MOON.

	^d	^h	^m
○ New Moon,	4	6	15.7
☾ First Quarter,	11	13	40.3
○ Full Moon,	18	7	41.0
☾ Last Quarter,	25	23	32.2

	^d	^h
☾ Perigee,	14	22.8
☾ Apogee,	26	19.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica W.	73° 41' 43"	3027	75° 11' 22"	3021	76° 41' 10"	3014	78° 11' 6"	3006
	Saturn W.	42 5 31	3088	43 34 57	3080	45 4 32	3024	46 34 15	3016
	Antares W.	29 6 38	3266	30 31 29	3288	31 56 54	3212	33 22 49	3189
	SUN E.	37 5 33	3417	35 43 36	3411	34 21 32	3405	32 59 21	3399
6	SUN W.	20 29 42	3089	21 58 32	3032	23 27 41	3037	24 57 8	3023
	α Arietis E.	58 19 33	2834	56 45 49	2831	55 12 2	2830	53 38 13	2830
	Aldebaran E.	90 20 9	2663	88 42 40	2656	87 4 59	2646	85 27 6	2638
	Mars E.	124 9 48	2686	122 32 50	2675	120 55 37	2665	119 18 10	2655
7	SUN W.	32 28 22	2964	33 59 20	2964	35 30 32	2943	37 1 56	2933
	α Arietis E.	45 49 24	2843	44 15 52	2850	42 42 29	2859	41 9 17	2870
	Aldebaran E.	77 14 53	2696	75 35 52	2688	73 56 40	2681	72 17 17	2672
	Mars E.	111 7 36	2607	109 28 52	2609	107 49 55	2591	106 10 46	2582
	Pollux E.	120 20 56	2708	118 44 27	2696	117 7 42	2686	115 30 42	2675
8	SUN W.	44 42 4	2885	46 14 42	2876	47 47 32	2867	49 20 33	2858
	α Arietis E.	33 28 7	2974	31 57 22	3010	30 27 22	3058	28 58 17	3106
	Aldebaran E.	63 57 38	2632	62 17 9	2626	60 36 30	2617	58 55 40	2609
	Mars E.	97 52 15	2643	96 12 0	2635	94 31 35	2627	92 51 0	2620
	Pollux E.	107 22 12	2624	105 43 50	2616	104 5 16	2606	102 26 29	2597
9	SUN W.	57 8 29	2814	58 42 38	2806	60 16 58	2796	61 51 28	2789
	α Pegasi W.	33 14 43	3388	34 37 13	3306	36 1 17	3292	37 26 48	3166
	Aldebaran E.	50 28 49	2471	48 46 55	2463	47 4 50	2456	45 22 35	2448
	Mars E.	84 25 33	2486	82 43 59	2479	81 2 16	2472	79 20 24	2466
	Pollux E.	94 9 38	2656	92 29 42	2648	90 49 36	2640	89 9 19	2633
10	SUN W.	69 46 46	2748	71 22 22	2740	72 58 9	2732	74 34 7	2724
	α Pegasi W.	44 51 51	2924	46 23 40	2898	47 56 14	2853	49 21 31	2825
	Aldebaran E.	36 48 41	2412	35 5 23	2406	33 21 55	2397	31 38 16	2390
	Mars E.	70 48 54	2436	69 6 11	2431	67 23 21	2426	65 40 23	2421
	Pollux E.	80 45 26	2499	79 4 11	2492	77 22 48	2487	75 41 16	2481
	Regulus E.	116 53 15	2417	115 10 6	2410	113 26 45	2403	111 43 14	2395
11	SUN W.	82 36 32	2684	84 13 33	2677	85 50 44	2669	87 28 5	2662
	α Pegasi W.	57 24 51	2703	59 1 27	2684	60 38 30	2668	62 15 57	2648
	Mars E.	57 3 52	2399	55 20 16	2396	53 36 36	2394	51 52 51	2391
	Pollux E.	67 11 38	2456	65 29 22	2451	63 47 0	2447	62 4 32	2444
	Regulus E.	103 2 59	2359	101 18 25	2352	99 33 41	2346	97 48 46	2338
12	SUN W.	95 37 22	2626	97 15 43	2618	98 54 13	2611	100 32 53	2604
	α Pegasi W.	70 28 34	2676	72 8 2	2664	73 47 46	2653	75 27 46	2643
	α Arietis W.	27 23 21	2901	28 55 38	2832	30 29 24	2772	32 4 29	2719
	Mars E.	43 13 34	2389	41 29 43	2391	39 45 55	2395	38 2 12	2400
	Pollux E.	53 31 17	2436	51 48 32	2436	50 5 48	2437	48 23 5	2439
	Regulus E.	89 1 44	2304	87 15 51	2296	85 29 48	2291	83 43 36	2285
13	SUN W.	108 48 23	2674	110 27 54	2668	112 7 33	2663	113 47 19	2658
	α Pegasi W.	83 51 2	2801	85 32 14	2494	87 13 35	2489	88 55 5	2484
	α Arietis W.	40 14 38	2840	41 54 55	2817	43 35 45	2493	45 17 5	2476
	Mars E.	29 26 32	2463	27 44 27	2467	26 2 55	2517	24 22 6	2556
	Pollux E.	39 51 1	2472	38 9 9	2466	36 27 36	2503	34 46 27	2523
	Regulus E.	74 50 25	2287	73 3 22	2282	71 16 12	2247	69 28 54	2243

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1	Spica W.	79° 41' 11"	2998	81° 11' 26"	2990	82° 41' 50"	2983	84° 12' 25"	2974
	Saturn W.	48 4 8	3009	49 34 10	3001	51 4 21	2993	52 34 43	2985
	Antares W.	34 49 11	3167	36 16 0	3147	37 43 13	3128	39 10 49	3110
	SUN E.	31 37 3	3393	30 14 38	3396	28 52 6	3390	27 29 27	3374
6	SUN W.	26 26 52	3010	27 56 52	2997	29 27 8	2986	30 57 38	2975
	α Arietis E.	52 4 23	2830	50 30 34	2831	48 56 47	2834	47 23 3	2836
	Aldebaran E.	83 49 2	2629	82 10 47	2621	80 32 20	2612	78 53 42	2604
	Mars E.	117 40 30	2645	116 2 36	2635	114 24 29	2626	112 46 9	2616
7	SUN W.	38 33 33	2923	40 5 22	2913	41 37 24	2904	43 9 38	2894
	α Arietis E.	39 36 19	2883	38 3 39	2901	36 31 21	2920	34 59 29	2946
	Aldebaran E.	70 37 43	2664	68 57 58	2666	67 18 2	2648	65 37 56	2640
	Mars E.	104 31 26	2674	102 51 55	2666	101 12 13	2658	99 32 19	2650
	Pollux E.	113 53 28	2664	112 16 0	2654	110 38 18	2643	109 0 22	2634
8	SUN W.	50 53 46	2849	52 27 10	2841	54 0 45	2832	55 34 31	2823
	α Arietis E.	27 30 17	3174	26 3 37	3255	24 38 33	3354	23 15 24	3485
	Aldebaran E.	57 14 39	2901	55 33 27	2494	53 52 5	2486	52 10 32	2479
	Mars E.	91 10 14	2513	89 29 18	2506	87 48 13	2499	86 6 58	2492
	Pollux E.	100 47 30	2598	99 8 19	2590	97 28 56	2572	95 49 23	2564
9	SUN W.	63 26 10	2781	65 1 3	2773	66 36 6	2765	68 11 21	2756
	α Pegasi W.	38 53 39	3106	40 21 41	3055	41 50 46	3006	43 20 51	2962
	Aldebaran E.	43 40 9	2441	41 57 33	2433	40 14 46	2426	38 31 49	2419
	Mars E.	77 38 23	2460	75 56 13	2454	74 13 55	2448	72 31 29	2442
	Pollux E.	87 28 52	2526	85 48 15	2519	84 7 28	2512	82 26 32	2505
10	SUN W.	76 10 15	2716	77 46 33	2708	79 23 2	2700	80 59 42	2692
	α Pegasi W.	51 3 26	2796	52 37 59	2771	54 13 5	2747	55 48 43	2725
	Aldebaran E.	29 54 27	2283	28 10 28	2376	26 26 19	2369	24 41 59	2362
	Mars E.	63 57 18	2416	62 14 5	2411	60 30 46	2407	58 47 22	2403
	Pollux E.	73 59 35	2475	72 17 47	2470	70 35 51	2465	68 53 48	2460
	Regulus E.	109 59 32	2398	108 15 39	2390	106 31 36	2373	104 47 23	2366
11	SUN W.	89 5 36	2655	90 43 18	2647	92 21 9	2640	93 59 11	2632
	α Pegasi W.	63 53 47	2632	65 31 59	2616	67 10 32	2609	68 49 24	2598
	Mars E.	50 9 3	2389	48 25 12	2387	46 41 20	2387	44 57 26	2387
	Pollux E.	60 22 0	2441	58 39 23	2439	56 56 43	2437	55 14 1	2436
	Regulus E.	96 3 42	2331	94 18 27	2324	92 33 2	2317	90 47 28	2311
12	SUN W.	102 11 42	2598	103 50 39	2592	105 29 45	2586	107 9 0	2580
	α Pegasi W.	77 8 0	2535	78 48 28	2524	80 29 8	2515	82 9 59	2508
	α Arietis W.	33 40 43	2675	35 17 58	2635	36 56 5	2600	38 35 0	2569
	Mars E.	36 18 37	2408	34 35 13	2416	32 52 2	2428	31 9 7	2443
	Pollux E.	46 40 26	2443	44 57 52	2448	43 15 25	2454	41 33 7	2462
	Regulus E.	81 57 15	2379	80 10 45	2374	78 24 7	2368	76 37 20	2362
13	SUN W.	115 27 12	2553	117 7 12	2549	118 47 18	2544	120 27 30	2540
	α Pegasi W.	90 36 41	2479	92 18 23	2475	94 0 11	2472	95 42 3	2470
	α Arietis W.	46 58 53	2487	48 41 7	2441	50 23 45	2426	52 6 43	2412
	Mars E.	22 42 13	2611	21 3 33	2678	19 26 23	2764	17 51 8	2875
	Pollux E.	33 5 45	2546	31 25 35	2576	29 46 6	2612	28 7 28	2656
	Regulus E.	67 41 30	2328	65 53 59	2334	64 6 22	2330	62 18 39	2327

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14	SUN W.	122° 7' 47"	2536	123° 48' 10"	2533	125° 28' 37"	2530	127° 9' 9"	2527
	α Pegasi W.	97 23 58	2469	99 5 54	2468	100 47 52	2469	102 29 50	2470
	α Arietis W.	53 50 1	2400	55 33 35	2389	57 17 25	2390	59 1 29	2371
	Aldebaran W.	19 38 21	2217	21 26 23	2214	23 14 30	2211	25 2 40	2206
	Regulus E.	60 30 51	2223	58 42 58	2220	56 55 1	2218	55 7 0	2215
	Spica E.	114 0 25	2233	112 12 46	2229	110 25 2	2226	108 37 13	2223
15	α Pegasi W.	110 58 48	2489	112 40 17	2497	114 21 35	2505	116 2 40	2517
	α Arietis W.	67 44 36	2339	69 29 38	2335	71 14 45	2333	72 59 56	2331
	Aldebaran W.	34 4 24	2200	35 52 51	2200	37 41 18	2200	39 29 45	2200
	Regulus E.	46 6 13	2210	44 18 1	2210	42 29 48	2211	40 41 37	2212
	Spica E.	99 37 12	2214	97 49 5	2214	96 0 58	2214	94 12 51	2214
16	α Arietis W.	81 46 17	2231	83 31 31	2233	85 16 42	2236	87 1 49	2240
	Aldebaran W.	48 31 42	2206	50 19 57	2212	52 8 7	2215	53 56 12	2219
	Mars W.	17 25 42	2292	19 0 33	2292	20 37 23	2290	22 15 51	2264
	Regulus E.	31 41 24	2227	29 53 37	2223	28 5 57	2229	26 18 27	2246
	Spica E.	85 12 34	2222	83 24 39	2225	81 36 49	2229	79 49 5	2223
	Saturn E.	117 21 10	2229	115 33 13	2224	113 45 21	2227	111 57 33	2231
17	α Arietis W.	95 45 44	2268	97 30 5	2275	99 14 14	2284	100 58 12	2294
	Aldebaran W.	62 54 55	2245	64 42 14	2252	66 29 24	2260	68 16 23	2267
	Mars W.	30 42 15	2439	32 25 3	2421	34 8 8	2413	35 51 24	2408
	Pollux W.	22 7 2	2663	23 39 45	2603	25 14 9	2741	26 49 54	2603
	Spica E.	70 52 8	2261	69 5 11	2268	67 18 24	2275	65 31 49	2263
	Saturn E.	103 0 13	2257	101 13 10	2264	99 26 16	2270	97 39 33	2278
	Antares E.	116 24 28	2322	114 39 1	2326	112 53 39	2331	111 8 25	2327
18	α Arietis W.	109 34 23	2450	111 16 47	2464	112 58 51	2478	114 40 35	2493
	Aldebaran W.	77 8 18	2313	78 54 0	2323	80 39 27	2333	82 24 39	2344
	Mars W.	44 28 30	2412	46 11 48	2417	47 54 58	2423	49 38 0	2430
	Pollux W.	35 0 56	2569	36 40 33	2559	38 20 25	2551	40 0 27	2548
	Spica E.	56 42 5	2332	54 56 52	2343	53 11 55	2355	51 27 14	2366
	Saturn E.	88 48 57	2322	87 3 30	2333	85 18 18	2343	83 33 21	2354
	Antares E.	102 24 36	2375	100 40 25	2384	98 56 28	2394	97 12 45	2405
19	Aldebaran W.	91 6 29	2404	92 49 57	2417	94 33 8	2431	96 15 59	2444
	Mars W.	58 10 22	2476	59 52 10	2487	61 33 41	2499	63 14 56	2511
	Pollux W.	48 21 3	2555	50 1 1	2561	51 40 50	2567	53 20 30	2574
	Spica E.	42 48 28	2435	41 5 42	2450	39 23 18	2465	37 41 17	2483
	Saturn E.	74 52 45	2416	73 9 31	2428	71 26 35	2441	69 43 59	2455
	Antares E.	86 38 14	2463	86 56 12	2479	85 14 29	2492	83 33 5	2507
	Venus E.	124 32 53	2722	122 56 56	2747	121 21 18	2761	119 45 59	2776
20	Aldebaran W.	104 45 18	2515	106 26 10	2530	108 6 40	2545	109 46 50	2561
	Mars W.	71 36 46	2578	73 16 11	2592	74 55 17	2607	76 34 3	2620
	Pollux W.	61 35 51	2625	63 14 18	2638	64 52 18	2649	66 30 8	2661
	Regulus W.	24 46 51	2543	26 27 5	2554	28 7 3	2566	29 46 44	2580
	Saturn E.	61 15 53	2527	59 35 16	2542	57 55 1	2556	56 15 6	2572
	Antares E.	75 11 9	2582	73 31 49	2596	71 52 51	2614	70 14 16	2631
	Venus E.	111 54 26	2655	110 21 9	2671	108 48 14	2687	107 15 39	2704
	α Aquilæ E.	121 47 57	3124	120 20 16	3118	118 52 29	3114	117 24 37	3118
21	Mars W.	84 42 43	2698	86 19 25	2714	87 55 46	2730	89 31 46	2745
	Pollux W.	74 34 51	2729	76 10 52	2743	77 46 35	2758	79 22 0	2772

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14	SUN W.	128° 49' 44"	2435	130° 30' 22"	2433	132° 11' 3"	2429	133° 51' 46"	2421
	α Pegasi W.	104 11 45	2472	105 53 39	2476	107 35 28	2478	109 17 11	2483
	α Arctis W.	60 45 46	2263	62 30 15	2265	64 14 54	2269	65 59 41	2244
	Aldebaran W.	26 50 55	2206	28 39 13	2204	30 27 35	2203	32 15 58	2201
	Regulus E.	53 18 55	2213	51 30 47	2212	49 42 37	2211	47 54 26	2210
	Spica E.	106 49 19	2220	105 1 21	2218	103 13 20	2216	101 25 17	2215
15	α Pegasi W.	117 43 31	2431	119 24 1	2445	121 4 11	2453	122 43 57	2453
	α Arctis W.	74 45 10	2330	76 30 27	2329	78 15 43	2329	80 1 0	2330
	Aldebaran W.	41 18 12	2201	43 6 38	2202	44 55 2	2204	46 43 24	2206
	Regulus E.	38 53 27	2214	37 5 21	2216	35 17 18	2219	33 29 18	2223
	Spica E.	92 24 44	2214	90 36 38	2216	88 48 34	2217	87 0 32	2220
16	α Arctis W.	88 46 50	2244	90 31 45	2249	92 16 33	2256	94 1 13	2262
	Aldebaran W.	55 44 11	2224	57 32 3	2229	59 19 49	2234	61 7 26	2239
	Mars W.	23 55 35	2233	25 36 17	2240	27 17 44	2245	28 59 47	2247
	Regulus E.	24 31 8	2264	22 44 1	2264	20 57 9	2276	19 10 33	2289
	Spica E.	78 1 26	2237	76 13 55	2243	74 26 31	2248	72 39 15	2254
	Saturn E.	110 9 51	2226	108 22 15	2230	106 34 47	2245	104 47 26	2250
17	α Arctis W.	102 41 56	2403	104 25 26	2414	106 8 41	2423	107 51 41	2437
	Aldebaran W.	70 3 11	2275	71 49 47	2284	73 36 11	2293	75 22 21	2302
	Mars W.	37 34 47	2405	39 18 14	2405	41 1 41	2406	42 45 7	2408
	Pollux W.	28 26 43	2266	30 4 23	2265	31 42 44	2261	33 21 38	2263
	Spica E.	63 45 26	2292	61 59 15	2293	60 13 17	2211	58 27 34	2221
	Saturn E.	95 53 1	2266	94 6 41	2264	92 20 33	2263	90 34 38	2213
	Antares E.	109 23 19	2243	107 38 22	2250	105 53 35	2257	104 9 0	2266
18	α Arctis W.	116 21 58	2500	118 2 59	2526	119 43 36	2543	121 23 48	2562
	Aldebaran W.	84 9 35	2265	85 54 14	2267	87 38 37	2279	89 22 42	2291
	Mars W.	51 20 53	2438	53 3 33	2446	54 46 2	2456	56 28 19	2465
	Pollux W.	41 46 33	2245	43 20 42	2245	45 0 52	2247	46 41 0	2251
	Spica E.	49 42 51	2279	47 58 46	2292	46 15 0	2406	44 31 34	2420
	Saturn E.	81 48 40	2266	80 4 15	2277	78 26 8	2289	76 36 17	2402
	Antares E.	95 29 18	2417	93 46 7	2428	92 3 12	2440	90 20 34	2453
19	Aldebaran W.	97 58 30	2466	99 40 42	2473	101 22 34	2487	103 4 6	2501
	Mars W.	64 55 54	2524	66 36 34	2537	68 16 57	2550	69 57 1	2564
	Pollux W.	55 0 0	2563	56 39 18	2563	58 18 23	2563	59 57 14	2513
	Spica E.	35 59 39	2500	34 18 25	2518	32 37 37	2536	30 57 14	2556
	Saturn E.	68 1 42	2469	66 19 44	2483	64 38 7	2497	62 56 50	2512
	Antares E.	81 52 1	2521	80 11 17	2535	78 30 53	2551	76 50 50	2566
	Venus E.	118 11 0	2793	116 36 21	2807	115 2 2	2823	113 28 4	2838
20	Aldebaran W.	111 26 39	2576	113 6 7	2591	114 45 14	2607	116 24 0	2623
	Mars W.	78 12 28	2637	79 50 33	2662	81 28 17	2667	83 5 40	2683
	Pollux W.	68 7 40	2674	69 44 55	2687	71 21 52	2701	72 58 31	2716
	Regulus W.	31 26 6	2563	33 5 10	2567	34 43 55	2571	36 22 22	2536
	Saturn E.	54 35 33	2598	52 56 20	2603	51 17 29	2618	49 38 59	2634
	Antares E.	68 36 3	2649	66 58 13	2665	65 20 46	2682	63 43 42	2700
	Venus E.	105 43 25	2921	104 11 33	2938	102 40 3	2955	101 8 53	2973
	α Aquilæ E.	115 56 42	3113	114 28 48	3114	113 0 55	3116	111 33 5	3120
21	Mars W.	91 7 25	2763	92 42 43	2778	94 17 40	2784	95 52 16	2809
	Pollux W.	80 57 5	2786	82 31 51	2801	84 6 18	2815	85 40 26	2830

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21	Regulus W.	38° 0' 31"	2660	39° 38' 18"	2665	41° 15' 46"	2679	42° 52' 54"	2684
	Saturn E.	48 0 51	2660	46 23 4	2666	44 45 38	2681	43 8 33	2697
	Antares E.	62 7 2	2718	60 30 45	2736	58 54 53	2754	57 19 25	2773
	Venus E.	99 38 5	2969	88 7 39	3006	96 37 34	3023	95 7 50	3040
	α Aquilæ E.	110 5 20	3125	108 37 41	3131	107 10 10	3138	105 42 47	3146
22	Mars W.	97 26 32	2826	99 0 28	2840	100 34 4	2866	102 7 19	2872
	Pollux W.	87 14 15	2846	88 47 45	2860	90 20 56	2874	91 53 49	2888
	Regulus W.	50 53 37	2767	52 28 48	2792	54 3 40	2796	55 38 13	2810
	Saturn E.	35 8 23	2776	33 33 24	2792	31 58 44	2807	30 24 26	2822
	Antares E.	49 28 15	2869	47 55 17	2890	46 22 45	2911	44 50 39	2922
	Venus E.	87 44 21	3124	86 16 40	3140	84 49 19	3166	83 22 17	3173
	α Aquilæ E.	98 28 32	3197	97 2 19	3208	95 36 19	3220	94 10 34	3233
	SUN E.	134 31 42	3121	133 3 58	3137	131 36 33	3163	130 9 27	3166
23	Mars W.	109 48 42	2946	111 20 2	2961	112 51 4	2975	114 21 48	2989
	Pollux W.	99 33 36	2969	101 4 39	2973	102 35 26	2987	104 5 55	3000
	Regulus W.	63 26 32	2877	64 59 20	2890	66 31 52	2901	68 4 9	2914
	Antares E.	37 17 11	3049	35 47 59	3076	34 19 20	3104	32 51 15	3134
	Venus E.	76 11 49	3248	74 46 37	3262	73 21 41	3276	71 57 2	3290
	α Aquilæ E.	87 5 39	3300	85 41 28	3316	84 17 35	3330	82 53 58	3346
	SUN E.	122 58 24	3241	121 33 3	3254	120 7 58	3268	118 43 9	3281
24	Regulus W.	75 41 50	2969	77 12 42	2979	78 43 21	2989	80 13 48	2997
	Spica W.	22 30 58	3062	24 0 6	3053	25 29 13	3064	26 58 19	3066
	Venus E.	64 57 35	3362	63 34 24	3364	62 11 26	3374	60 48 40	3384
	α Aquilæ E.	76 0 21	3424	74 38 32	3441	73 17 3	3468	71 55 52	3476
	SUN E.	111 42 42	3340	110 19 17	3361	108 56 5	3362	107 33 5	3372
25	Regulus W.	87 43 27	3086	89 12 55	3043	90 42 16	3048	92 11 29	3063
	Spica W.	34 22 57	3073	35 51 40	3076	37 20 19	3080	38 48 54	3092
	Venus E.	53 57 36	3480	52 35 53	3437	51 14 18	3444	49 52 51	3460
	α Aquilæ E.	65 14 54	3608	63 55 45	3589	62 36 59	3610	61 18 35	3632
	SUN E.	100 40 39	3413	99 18 37	3420	97 56 43	3426	96 34 56	3432
26	Regulus W.	99 36 8	3073	101 4 50	3076	102 33 29	3078	104 2 5	3079
	Spica W.	46 10 57	3094	47 39 14	3096	49 7 30	3096	50 35 44	3097
	Saturn W.	13 50 0	3126	15 17 38	3120	16 45 23	3115	18 13 14	3111
	Venus E.	43 7 11	3476	41 46 19	3478	40 25 30	3480	39 4 44	3483
	α Aquilæ E.	54 52 47	3766	53 36 59	3766	52 21 42	3817	51 6 57	3851
	SUN E.	89 47 29	3463	88 26 12	3465	87 4 59	3467	85 43 47	3469
27	Regulus W.	111 24 52	3090	112 53 26	3078	114 22 2	3077	115 50 41	3074
	Spica W.	57 56 56	3092	59 25 15	3091	60 53 36	3088	62 22 0	3085
	Saturn W.	25 33 36	3094	27 1 53	3091	28 30 14	3087	29 58 38	3084
	Antares W.	15 12 22	4103	16 22 20	3989	17 35 0	3904	18 49 58	3966
	Venus E.	32 21 25	3488	31 0 47	3487	29 40 8	3496	28 19 28	3485
	α Aquilæ E.	45 2 36	4080	43 51 55	4113	42 42 5	4171	41 33 11	4235
	SUN E.	78 58 4	3469	77 36 54	3467	76 15 42	3464	74 54 28	3462
28	Spica W.	69 45 5	3064	71 13 59	3069	72 43 0	3063	74 12 7	3047
	Saturn W.	37 22 0	3080	38 50 59	3084	40 20 4	3047	41 49 18	3041
	Antares W.	25 27 18	3386	26 49 51	3349	28 13 6	3314	29 37 0	3283
	SUN E.	68 7 17	3491	66 45 35	3425	65 23 46	3419	64 1 51	3412

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Regulus	W.	44° 29' 41"	2708	46° 6' 9"	2724	47° 42' 18"	2728	49° 18' 7"	2753
	Saturn	E.	41 31 49	2713	39 55 26	2729	38 19 25	2744	36 43 44	2760
	Antares	E.	55 44 21	2792	54 9 42	2811	52 35 27	2830	51 1 38	2849
	Venus	E.	93 38 26	3037	92 9 24	3074	90 40 43	3091	89 12 22	3107
	α Aquilæ	E.	104 15 33	3155	102 48 30	3165	101 21 38	3174	99 54 59	3185
22	Mars	W.	103 40 14	2887	105 12 49	2901	106 45 6	2916	108 17 3	2931
	Pollux	W.	93 26 22	2903	94 58 38	2917	96 30 35	2931	98 2 14	2946
	Regulus	W.	57 12 29	2924	58 46 26	2938	60 20 5	2951	61 53 27	2964
	Saturn	E.	28 50 27	2936	27 16 48	2944	25 43 30	2959	24 10 31	2965
	Antares	E.	43 19 1	2954	41 47 50	2977	40 17 8	3000	38 46 54	3024
	Venus	E.	81 55 35	3188	80 29 11	3204	79 3 6	3219	77 37 19	3233
	α Aquilæ	E.	92 45 3	3246	91 19 48	3269	90 54 49	3273	88 30 6	3287
	SUN	E.	128 42 39	3183	127 16 9	3196	125 49 57	3212	124 24 2	3226
23	Mars	W.	115 52 15	3003	117 22 24	3017	118 52 16	3030	120 21 52	3043
	Pollux	W.	105 36 8	3013	107 6 5	3026	108 35 46	3039	110 5 11	3051
	Regulus	W.	69 36 10	2926	71 7 56	2937	72 39 27	2948	74 10 45	2959
	Antares	E.	31 23 47	3168	29 56 59	3204	28 30 54	3242	27 5 34	3284
	Venus	E.	70 32 39	3303	69 8 31	3316	67 44 38	3329	66 20 59	3341
	α Aquilæ	E.	81 30 39	3361	80 7 37	3376	78 44 54	3392	77 22 28	3408
	SUN	E.	117 18 35	3294	115 54 15	3306	114 30 10	3318	113 6 20	3330
24	Regulus	W.	81 44 4	3006	83 14 10	3014	84 44 5	3022	86 13 51	3029
	Spica	W.	28 27 22	3059	29 56 22	3062	31 25 18	3065	32 54 10	3069
	Venus	E.	59 26 5	3394	58 3 42	3404	56 41 30	3413	55 19 29	3422
	α Aquilæ	E.	70 35 0	3496	69 14 28	3511	67 54 16	3520	66 34 24	3549
	SUN	E.	106 10 15	3381	104 47 37	3390	103 25 8	3396	102 2 49	3406
25	Regulus	W.	93 40 36	3066	95 9 36	3063	96 38 31	3067	98 7 22	3070
	Spica	W.	40 17 24	3065	41 45 52	3068	43 14 16	3091	44 42 38	3092
	Venus	E.	48 31 31	3466	47 10 18	3461	45 49 10	3466	44 28 8	3471
	α Aquilæ	E.	60 0 35	3654	58 42 59	3677	57 25 48	3703	56 9 4	3728
	SUN	E.	95 13 16	3436	93 51 42	3442	92 30 13	3446	91 8 49	3460
26	Regulus	W.	105 30 40	3081	106 59 13	3081	108 27 46	3081	109 56 19	3081
	Spica	W.	52 3 58	3097	53 32 11	3096	55 0 25	3096	56 28 39	3095
	Saturn	W.	19 41 10	3108	21 9 10	3104	22 37 15	3101	24 5 24	3097
	Venus	E.	37 44 1	3485	36 23 20	3467	35 2 41	3488	33 42 3	3488
	α Aquilæ	E.	49 52 47	3866	48 39 13	3924	47 26 17	3965	46 14 4	4011
	SUN	E.	84 22 37	3460	83 1 29	3461	81 40 21	3461	80 19 13	3460
27	Regulus	W.	117 19 22	3071	118 48 7	3068	120 16 55	3064	121 45 48	3060
	Spica	W.	63 50 27	3082	65 18 59	3078	66 47 36	3073	68 16 18	3069
	Saturn	W.	31 27 8	3079	32 55 42	3076	34 24 22	3070	35 53 8	3065
	Antares	W.	20 6 48	3610	21 25 11	3642	22 44 49	3480	24 5 35	3481
	Venus	E.	26 58 47	3463	25 38 3	3461	24 17 18	3480	22 56 31	3478
	α Aquilæ	E.	40 25 18	4306	39 18 31	4386	38 12 56	4474	37 8 41	4572
	SUN	E.	73 33 10	3449	72 11 48	3446	70 50 23	3441	69 28 53	3436
28	Spica	W.	75 41 22	3040	77 10 46	3033	78 40 18	3026	80 9 59	3018
	Saturn	W.	43 18 40	3034	44 48 10	3027	46 17 50	3019	47 47 39	3011
	Antares	W.	31 1 31	3266	32 26 34	3231	33 52 6	3209	35 18 5	3187
	SUN	E.	62 39 48	3405	61 17 38	3396	59 55 18	3390	58 32 50	3381

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Fri.	1	^h 22 ^m 47 ^s 56.31	9.368	S. [°] 7 ['] 38 ["] 31.9	56.94	16' 10.40	^s 65.44	^m 12 ^s 36.91	^s 0.488
Sat.	2	22 51 40.85	9.346	7 15 42.2	57.21	16 10.15	65.36	12 24.94	0.509
Sun.	3	22 55 24.90	9.327	6 52 46.1	57.46	16 9.90	65.29	12 12.47	0.529
Mon.	4	22 59 8.48	9.308	6 29 44.3	57.69	16 9.65	65.22	11 59.53	0.548
Tues.	5	23 2 51.60	9.290	6 6 37.1	57.91	16 9.39	65.16	11 46.15	0.566
Wed.	6	23 6 34.30	9.272	5 43 24.9	58.11	16 9.14	65.10	11 32.33	0.584
Thur.	7	23 10 16.58	9.255	5 20 8.2	58.30	16 8.88	65.04	11 18.10	0.601
Fri.	8	23 13 58.46	9.238	4 56 47.2	58.47	16 8.63	64.98	11 3.46	0.618
Sat.	9	23 17 39.95	9.222	4 33 22.3	58.62	16 8.37	64.93	10 48.44	0.634
Sun.	10	23 21 21.07	9.207	4 9 53.9	58.75	16 8.12	64.88	10 33.05	0.649
Mon.	11	23 25 1.82	9.192	3 46 22.7	58.87	16 7.86	64.83	10 17.29	0.664
Tues.	12	23 28 42.23	9.178	3 22 49.0	58.97	16 7.60	64.78	10 1.19	0.677
Wed.	13	23 32 22.32	9.165	2 59 12.9	59.06	16 7.34	64.74	9 44.77	0.690
Thur.	14	23 36 2.11	9.153	2 35 34.8	59.13	16 7.08	64.70	9 28.05	0.702
Fri.	15	23 39 41.62	9.142	2 11 55.3	59.19	16 6.82	64.66	9 11.05	0.713
Sat.	16	23 43 20.87	9.132	1 48 14.8	59.23	16 6.56	64.63	8 53.80	0.723
Sun.	17	23 46 59.90	9.123	1 24 33.4	59.25	16 6.29	64.60	8 36.33	0.732
Mon.	18	23 50 38.73	9.115	1 0 51.5	59.26	16 6.02	64.57	8 18.66	0.740
Tues.	19	23 54 17.37	9.108	0 37 9.6	59.26	16 5.75	64.55	8 0.80	0.748
Wed.	20	23 57 55.84	9.102	S. 0 13 28.0	59.24	16 5.48	64.53	7 42.77	0.755
Thur.	21	0 1 34.18	9.097	N. 0 10 13.1	59.21	16 5.20	64.51	7 24.60	0.760
Fri.	22	0 5 12.40	9.093	0 33 53.3	59.16	16 4.92	64.49	7 6.32	0.764
Sat.	23	0 8 50.54	9.089	0 57 32.1	59.10	16 4.64	64.48	6 47.96	0.767
Sun.	24	0 12 28.61	9.087	1 21 9.3	59.02	16 4.36	64.47	6 29.53	0.769
Mon.	25	0 16 6.64	9.086	1 44 44.5	58.93	16 4.08	64.46	6 11.06	0.770
Tues.	26	0 19 44.65	9.086	2 8 17.3	58.83	16 3.80	64.46	5 52.58	0.770
Wed.	27	0 23 22.66	9.086	2 31 47.4	58.71	16 3.51	64.46	5 34.09	0.770
Thur.	28	0 27 0.71	9.088	2 55 14.6	58.58	16 3.23	64.46	5 15.63	0.768
Fri.	29	0 30 38.80	9.090	3 18 38.4	58.43	16 2.94	64.47	4 57.22	0.766
Sat.	30	0 34 16.95	9.093	3 41 58.5	58.27	16 2.66	64.48	4 38.86	0.763
Sun.	31	0 37 55.18	9.097	4 5 14.6	58.09	16 2.37	64.49	4 20.59	0.759
Mon.	32	0 41 33.51	9.102	N. 4 28 26.2	57.90	16 2.09	64.50	4 2.42	0.755

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Fri.	1	^h 22 ^m 47 ^s 54.33	9.368	S. 7° 38' 43.9"	56.94	^m 12 ^s 37.01	0.488	^h 22 ^m 35 ^s 17.32
Sat.	2	22 51 38.91	9.346	7 15 54.0	57.21	12 25.04	0.509	22 39 13.87
Sun.	3	22 55 23.00	9.327	6 52 57.8	57.46	12 12.57	0.529	22 43 10.43
Mon.	4	22 59 6.62	9.308	6 29 55.8	57.69	11 59.64	0.548	22 47 6.98
Tues.	5	23 2 49.79	9.290	6 6 48.4	57.91	11 46.26	0.566	22 51 3.53
Wed.	6	23 6 32.52	9.272	5 43 36.1	58.11	11 32.44	0.584	22 55 0.08
Thur.	7	23 10 14.84	9.255	5 20 19.2	58.30	11 18.21	0.601	22 58 56.63
Fri.	8	23 13 56.76	9.238	4 56 58.0	58.47	11 3.57	0.618	23 2 53.19
Sat.	9	23 17 38.29	9.222	4 33 32.8	58.62	10 48.55	0.634	23 6 49.74
Sun.	10	23 21 19.45	9.207	4 10 4.2	58.75	10 33.16	0.649	23 10 46.29
Mon.	11	23 25 0.24	9.192	3 46 32.8	58.87	10 17.40	0.664	23 14 42.84
Tues.	12	23 28 40.69	9.178	3 22 58.9	58.97	10 1.30	0.677	23 18 39.39
Wed.	13	23 32 20.82	9.165	2 59 22.6	59.06	9 44.88	0.690	23 22 35.94
Thur.	14	23 36 0.66	9.153	2 35 44.2	59.13	9 28.16	0.702	23 26 32.50
Fri.	15	23 39 40.22	9.142	2 12 4.4	59.19	9 11.17	0.713	23 30 29.05
Sat.	16	23 43 19.52	9.132	1 48 23.6	59.23	8 53.92	0.723	23 34 25.60
Sun.	17	23 46 58.59	9.123	1 24 41.9	59.25	8 36.44	0.732	23 38 22.15
Mon.	18	23 50 37.46	9.115	1 0 59.7	59.26	8 18.76	0.740	23 42 18.70
Tues.	19	23 54 16.15	9.108	0 37 17.5	59.26	8 0.90	0.748	23 46 15.25
Wed.	20	23 57 54.67	9.102	S. 0 13 35.6	59.24	7 42.88	0.755	23 50 11.80
Thur.	21	0 1 33.05	9.097	N. 0 10 5.8	59.21	7 24.69	0.760	23 54 8.36
Fri.	22	0 5 11.32	9.093	0 33 46.3	59.16	7 6.41	0.764	23 58 4.91
Sat.	23	0 8 49.51	9.089	0 57 25.4	59.10	6 48.05	0.767	0 2 1.46
Sun.	24	0 12 27.62	9.087	1 21 2.9	59.02	6 29.61	0.769	0 5 58.01
Mon.	25	0 16 5.70	9.086	1 44 38.4	58.93	6 11.14	0.770	0 9 54.56
Tues.	26	0 19 43.77	9.086	2 8 11.5	58.83	5 52.65	0.770	0 13 51.12
Wed.	27	0 23 21.83	9.086	2 31 42.0	58.71	5 34.16	0.770	0 17 47.67
Thur.	28	0 26 59.92	9.088	2 55 9.5	58.58	5 15.70	0.768	0 21 44.22
Fri.	29	0 30 38.05	9.090	3 18 33.6	58.43	4 57.28	0.766	0 25 40.77
Sat.	30	0 34 16.24	9.093	3 41 54.0	58.27	4 38.92	0.763	0 29 37.32
Sun.	31	0 37 54.52	9.097	4 5 10.4	58.09	4 20.64	0.759	0 33 33.88
Mon.	32	0 41 32.90	9.102	N. 4 28 22.3	57.90	4 2.47	0.755	0 37 30.43

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	60	340° 28' 37.7 ^h	28° 30.5 ^m	150.46 ^s	+0.62	.99962270	46.4	1 ^h 24 ^m 28.80 ^s	
2	61	341 28 47.9	28 40.6	150.39	0.56	.9963389	46.7	1 20 32.89	
3	62	342 28 56.4	28 49.0	150.32	0.47	.9964514	46.9	1 16 36.99	
4	63	343 29 3.1	28 55.6	150.25	0.36	.9965644	47.1	1 12 41.08	
5	64	344 29 8.1	29 0.5	150.17	0.24	.9966778	47.3	1 8 45.18	
6	65	345 29 11.2	29 3.5	150.09	+0.10	.9967915	47.5	1 4 49.28	
7	66	346 29 12.4	29 4.6	150.01	—0.04	.9969056	47.6	1 0 53.37	
8	67	347 29 11.6	29 3.7	149.93	0.17	.9970199	47.8	0 56 57.46	
9	68	348 29 8.7	29 0.7	149.84	0.28	.9971346	47.9	0 53 1.55	
10	69	349 29 3.7	28 55.6	149.75	0.37	.9972497	48.0	0 49 5.64	
11	70	350 28 56.6	28 48.5	149.66	0.44	.9973652	48.2	0 45 9.73	
12	71	351 28 47.2	28 39.0	149.57	0.49	.9974811	48.4	0 41 13.83	
13	72	352 28 35.5	28 27.2	149.47	0.51	.9975975	48.7	0 37 17.93	
14	73	353 28 21.5	28 13.1	149.38	0.49	.9977147	49.0	0 33 22.03	
15	74	354 28 5.3	27 56.8	149.28	0.44	.9978327	49.3	0 29 26.12	
16	75	355 27 46.8	27 38.3	149.19	0.35	.9979516	49.7	0 25 30.22	
17	76	356 27 26.0	27 17.4	149.09	0.25	.9980714	50.1	0 21 34.31	
18	77	357 27 3.1	26 54.4	149.00	0.14	.9981922	50.5	0 17 38.40	
19	78	358 26 38.0	26 29.2	148.91	—0.01	.9983139	50.9	0 13 42.50	
20	79	359 26 10.9	26 2.0	148.82	+0.13	.9984366	51.4	0 9 46.59	
21	80	0 25 41.7	25 32.8	148.74	0.26	.9985603	51.8	0 5 50.68	
22	81	1 25 10.6	25 1.6	148.66	0.39	.9986851	52.2	0 1 54.77	
23	82	2 24 37.6	24 28.5	148.59	0.50	.9988108	52.6	23 54 2.96	
24	83	3 24 2.7	23 53.5	148.51	0.59	.9989373	52.9	23 50 7.06	
25	84	4 23 25.9	23 16.6	148.43	0.65	.9990644	53.1	23 46 11.15	
26	85	5 22 47.3	22 38.0	148.35	0.69	.9991920	53.3	23 42 15.25	
27	86	6 22 6.9	21 57.5	148.28	0.70	.9993200	53.4	23 38 19.34	
28	87	7 21 24.7	21 15.2	148.20	0.66	.9994481	53.4	23 34 23.44	
29	88	8 20 40.8	20 31.2	148.13	0.61	.9995762	53.4	23 30 27.53	
30	89	9 19 55.1	19 45.4	148.05	0.52	.9997042	53.3	23 26 31.62	
31	90	10 19 7.6	18 57.9	147.98	0.43	.9998320	53.2	23 22 35.72	
32	91	11 18 18.2	18 8.4	147.90	+0.31	.9999594	53.0	23 18 39.81	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S										
Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.				
							h	m		m	d
1	14 54.5	14 57.7	54 36.2	+0.87	54 47.7	+1.04	21 1.9	2.01	24.7	
2	15 1.3	15 5.4	55 1.1	1.18	55 16.1	1.31	21 50.2	2.01	25.7	
3	15 9.8	15 14.5	55 32.4	1.41	55 49.7	1.48	22 38.6	2.01	26.7	
4	15 19.4	15 24.5	56 7.8	1.53	56 26.4	1.55	23 27.0	2.02	27.7	
5	15 29.6	15 34.6	56 45.0	1.55	57 3.4	1.51	0 6		28.7	
6	15 39.5	15 44.1	57 21.3	1.45	57 38.3	1.38	0 15.6	2.04	0.1	
7	15 48.4	15 52.5	57 54.3	1.28	58 9.0	1.17	1 4.7	2.07	1.1	
8	15 56.1	15 59.3	58 22.3	1.05	58 34.1	0.92	1 54.7	2.11	2.1	
9	16 2.1	16 4.5	58 44.4	0.79	58 53.0	0.66	2 46.1	2.18	3.1	
10	16 6.4	16 7.9	59 0.2	0.53	59 5.9	0.41	3 39.2	2.25	4.1	
11	16 9.1	16 9.9	59 10.2	0.30	59 13.1	+0.19	4 34.1	2.32	5.1	
12	16 10.4	16 10.5	59 14.7	+0.00	59 15.2	-0.01	5 30.7	2.38	6.1	
13	16 10.3	16 9.8	59 14.5	-0.10	59 12.7	0.20	6 28.3	2.40	7.1	
14	16 9.0	16 7.9	59 9.7	0.29	59 5.6	0.39	7 26.0	2.38	8.1	
15	16 6.4	16 4.6	59 0.3	0.49	58 53.7	0.60	8 22.8	2.33	9.1	
16	16 2.5	16 0.0	58 45.9	0.71	58 36.7	0.82	9 17.9	2.25	10.1	
17	15 57.1	15 53.9	58 26.2	0.93	58 14.4	1.04	10 11.0	2.16	11.1	
18	15 50.3	15 46.4	58 1.2	1.15	57 46.8	1.25	11 1.9	2.08	12.1	
19	15 42.2	15 37.7	57 31.3	1.33	57 14.9	1.40	11 51.0	2.02	13.1	
20	15 33.1	15 28.3	56 57.8	1.45	56 40.2	1.48	12 38.7	1.97	14.1	
21	15 23.4	15 18.6	56 22.4	1.49	56 4.6	1.47	13 25.5	1.94	15.1	
22	15 13.8	15 9.3	55 47.2	1.43	55 30.5	1.35	14 11.9	1.93	16.1	
23	15 5.0	15 1.1	55 14.7	1.26	55 0.3	1.15	14 58.1	1.93	17.1	
24	14 57.6	14 54.5	54 47.4	1.00	54 36.2	0.84	15 44.5	1.94	18.1	
25	14 52.0	14 50.1	54 27.1	0.67	54 20.1	0.48	16 31.3	1.96	19.1	
26	14 48.9	14 48.3	54 15.5	-0.28	54 13.3	-0.08	17 18.4	1.97	20.1	
27	14 48.4	14 49.2	54 13.7	+0.14	54 16.6	+0.36	18 5.9	1.98	21.1	
28	14 50.7	14 52.9	54 22.2	0.57	54 30.4	0.79	18 53.5	1.98	22.1	
29	14 55.8	14 59.4	54 41.1	0.99	54 54.2	1.19	19 41.2	1.99	23.1	
30	15 3.6	15 8.4	55 9.7	1.38	55 27.2	1.54	20 28.9	1.99	24.1	
31	15 13.7	15 19.4	55 46.6	1.68	56 7.5	1.80	21 16.9	2.01	25.1	
32	15 25.4	15 31.6	56 29.7	+1.88	56 52.6	+1.93	22 5.2	2.03	26.1	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	18 56 19.02	2.1017	S. 17° 50' 43.7"	1.985	0	20 37 34.48	2.1136	S. 14° 38' 46.6"	5.946
1	18 58 25.14	2.1032	17 48 42.0	2.070	1	20 39 41.30	2.1136	14 32 47.6	6.023
2	19 0 31.29	2.1037	17 46 35.2	2.156	2	20 41 48.11	2.1136	14 26 43.9	6.099
3	19 2 37.46	2.1032	17 44 23.3	2.241	3	20 43 54.93	2.1137	14 20 35.7	6.175
4	19 4 43.67	2.1037	17 42 6.3	2.327	4	20 46 1.76	2.1137	14 14 22.9	6.251
5	19 6 49.91	2.1042	17 39 44.1	2.412	5	20 48 8.58	2.1138	14 8 5.6	6.326
6	19 8 56.17	2.1046	17 37 16.9	2.497	6	20 50 15.41	2.1138	14 1 43.8	6.401
7	19 11 2.46	2.1051	17 34 44.5	2.582	7	20 52 22.24	2.1138	13 55 17.5	6.475
8	19 13 8.78	2.1055	17 32 7.0	2.667	8	20 54 29.07	2.1139	13 48 46.7	6.549
9	19 15 15.12	2.1056	17 29 24.4	2.752	9	20 56 35.91	2.1139	13 42 11.5	6.623
10	19 17 21.48	2.1062	17 26 36.7	2.837	10	20 58 42.74	2.1139	13 35 31.9	6.697
11	19 19 27.86	2.1066	17 23 43.9	2.922	11	21 0 49.58	2.1140	13 28 47.9	6.770
12	19 21 34.27	2.1070	17 20 46.0	3.007	12	21 2 56.42	2.1140	13 21 59.5	6.843
13	19 23 40.70	2.1073	17 17 43.0	3.092	13	21 5 3.26	2.1141	13 15 6.8	6.914
14	19 25 47.15	2.1077	17 14 35.0	3.176	14	21 7 10.11	2.1141	13 8 9.8	6.986
15	19 27 53.62	2.1080	17 11 21.9	3.261	15	21 9 16.95	2.1141	13 1 8.5	7.057
16	19 30 0.11	2.1083	17 8 3.7	3.346	16	21 11 23.80	2.1142	12 54 2.9	7.128
17	19 32 6.61	2.1086	17 4 40.5	3.429	17	21 13 30.65	2.1142	12 46 53.1	7.198
18	19 34 13.14	2.1090	17 1 12.2	3.513	18	21 15 37.50	2.1142	12 39 39.1	7.268
19	19 36 19.69	2.1093	16 57 38.9	3.597	19	21 17 44.35	2.1143	12 32 20.9	7.337
20	19 38 26.25	2.1095	16 54 0.5	3.681	20	21 19 51.21	2.1143	12 24 58.6	7.406
21	19 40 32.83	2.1097	16 50 17.0	3.765	21	21 21 58.07	2.1143	12 17 32.2	7.474
22	19 42 39.42	2.1100	16 46 28.6	3.849	22	21 24 4.93	2.1144	12 10 1.7	7.543
23	19 44 46.03	2.1102	S. 16° 42' 35.2"	3.933	23	21 26 11.79	2.1144	S. 12° 2' 27.1"	7.610
SATURDAY 2.					MONDAY 4.				
0	19 46 52.65	2.1104	S. 16° 38' 36.7"	4.016	0	21 28 18.66	2.1145	S. 11° 54' 48.5"	7.677
1	19 48 59.28	2.1107	16 34 33.3	4.099	1	21 30 25.53	2.1146	11 47 5.9	7.743
2	19 51 5.93	2.1109	16 30 24.9	4.182	2	21 32 32.41	2.1147	11 39 19.4	7.808
3	19 53 12.59	2.1111	16 26 11.5	4.264	3	21 34 39.29	2.1147	11 31 28.9	7.873
4	19 55 19.27	2.1113	16 21 53.1	4.347	4	21 36 46.17	2.1148	11 23 34.5	7.938
5	19 57 25.95	2.1115	16 17 29.8	4.429	5	21 38 53.06	2.1149	11 15 36.3	8.002
6	19 59 32.64	2.1117	16 13 1.6	4.512	6	21 40 59.96	2.1151	11 7 34.3	8.066
7	20 1 39.35	2.1119	16 8 28.4	4.593	7	21 43 6.88	2.1152	10 59 28.5	8.130
8	20 3 46.07	2.1120	16 3 50.4	4.675	8	21 45 13.79	2.1152	10 51 18.9	8.191
9	20 5 52.79	2.1122	15 59 7.4	4.756	9	21 47 20.70	2.1153	10 43 5.6	8.253
10	20 7 59.53	2.1123	15 54 19.6	4.838	10	21 49 27.62	2.1154	10 34 48.6	8.314
11	20 10 6.27	2.1124	15 49 26.9	4.919	11	21 51 34.55	2.1156	10 26 28.0	8.374
12	20 12 13.02	2.1126	15 44 29.4	4.999	12	21 53 41.49	2.1157	10 18 3.7	8.434
13	20 14 19.78	2.1127	15 39 27.0	5.080	13	21 55 48.44	2.1159	10 9 35.9	8.493
14	20 16 26.54	2.1128	15 34 19.8	5.160	14	21 57 55.40	2.1161	10 1 4.5	8.552
15	20 18 33.31	2.1129	15 29 7.8	5.240	15	22 0 2.37	2.1163	9 52 29.6	8.610
16	20 20 40.09	2.1131	15 23 51.0	5.319	16	22 2 9.35	2.1165	9 43 51.3	8.668
17	20 22 46.88	2.1131	15 18 29.4	5.399	17	22 4 16.35	2.1167	9 35 9.5	8.724
18	20 24 53.66	2.1131	15 13 3.1	5.478	18	22 6 23.36	2.1169	9 26 24.3	8.780
19	20 27 0.45	2.1132	15 7 32.1	5.557	19	22 8 30.38	2.1171	9 17 35.8	8.836
20	20 29 7.25	2.1133	15 1 56.3	5.635	20	22 10 37.41	2.1173	9 8 44.0	8.891
21	20 31 14.05	2.1134	14 56 15.9	5.713	21	22 12 44.46	2.1177	8 59 48.9	8.945
22	20 33 20.86	2.1135	14 50 30.8	5.791	22	22 14 51.53	2.1179	8 50 50.6	8.998
23	20 35 27.67	2.1135	14 44 41.0	5.868	23	22 16 58.61	2.1182	8 41 49.2	9.051
24	20 37 34.48	2.1136	S. 14° 38' 46.6"	5.946	24	22 19 5.71	2.1185	S. 8° 32' 44.6"	9.103

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	22 19 5.71	2.1188	S. 8° 32' 44.6	9.103	0	0 1 29.29	2.1567	S. 0° 30' 52.0	10.643
1	22 21 12.83	2.1188	8 23 36.9	9.164	1	0 3 38.73	2.1561	0 20 13.2	10.652
2	22 23 19.97	2.1191	8 14 26.1	9.205	2	0 5 48.26	2.1556	S. 0 9 33.8	10.660
3	22 25 27.12	2.1194	8 5 12.3	9.255	3	0 7 57.87	2.1559	N. 0 1 6.1	10.668
4	22 27 34.30	2.1198	7 55 55.5	9.304	4	0 10 7.57	2.1524	0 11 46.4	10.675
5	22 29 41.50	2.1203	7 46 35.8	9.362	5	0 12 17.36	2.1530	0 22 27.1	10.680
6	22 31 48.73	2.1206	7 37 13.3	9.399	6	0 14 27.24	2.1535	0 33 8.0	10.685
7	22 33 55.98	2.1210	7 27 47.9	9.446	7	0 16 37.22	2.1571	0 43 49.2	10.688
8	22 36 3.25	2.1214	7 18 19.7	9.492	8	0 18 47.29	2.1567	0 54 30.6	10.691
9	22 38 10.55	2.1219	7 8 48.8	9.538	9	0 20 57.46	2.1708	1 5 12.1	10.692
10	22 40 17.88	2.1223	6 59 15.2	9.582	10	0 23 7.73	2.1730	1 15 53.7	10.692
11	22 42 25.23	2.1226	6 49 38.9	9.627	11	0 25 18.10	2.1787	1 26 35.2	10.692
12	22 44 32.62	2.1233	6 40 0.0	9.670	12	0 27 28.57	2.1733	1 37 16.6	10.690
13	22 46 40.03	2.1236	6 30 18.6	9.712	13	0 29 39.14	2.1771	1 47 57.9	10.697
14	22 48 47.48	2.1244	6 20 34.6	9.753	14	0 31 49.82	2.1789	1 58 39.0	10.698
15	22 50 54.96	2.1250	6 10 48.2	9.794	15	0 34 0.61	2.1807	2 9 19.9	10.679
16	22 53 2.48	2.1255	6 0 59.3	9.834	16	0 36 11.51	2.1835	2 20 0.4	10.673
17	22 55 10.03	2.1262	5 51 8.1	9.873	17	0 38 22.51	2.1843	2 30 40.6	10.668
18	22 57 17.62	2.1268	5 41 14.6	9.911	18	0 40 33.63	2.1863	2 41 20.3	10.658
19	22 59 25.24	2.1274	5 31 18.8	9.949	19	0 42 44.87	2.1882	2 51 59.5	10.649
20	23 1 32.91	2.1281	5 21 20.8	9.986	20	0 44 56.22	2.1902	3 2 38.1	10.638
21	23 3 40.61	2.1286	5 11 20.6	10.021	21	0 47 7.69	2.1921	3 13 16.1	10.627
22	23 5 48.36	2.1296	5 1 18.3	10.055	22	0 49 19.27	2.1941	3 23 53.4	10.615
23	23 7 56.15	2.1302	S. 4 51 14.0	10.089	23	0 51 30.97	2.1961	N. 3 34 29.9	10.601
WEDNESDAY 6.					FRIDAY, 8.				
0	23 10 3.99	2.1310	S. 4 41 7.6	10.122	0	0 53 42.80	2.1982	N. 3 45 5.7	10.587
1	23 12 11.87	2.1316	4 30 59.3	10.164	1	0 55 54.75	2.2002	3 55 40.5	10.571
2	23 14 19.80	2.1326	4 20 49.1	10.196	2	0 58 6.83	2.2023	4 6 14.3	10.555
3	23 16 27.78	2.1334	4 10 37.0	10.216	3	1 0 19.03	2.2044	4 16 47.0	10.537
4	23 18 35.81	2.1342	4 0 23.1	10.245	4	1 2 31.36	2.2066	4 27 18.7	10.518
5	23 20 43.89	2.1351	3 50 7.5	10.275	5	1 4 43.82	2.2088	4 37 49.2	10.498
6	23 22 52.02	2.1360	3 39 50.2	10.302	6	1 6 56.42	2.2111	4 48 18.5	10.477
7	23 25 0.21	2.1370	3 29 31.2	10.329	7	1 9 9.15	2.2133	4 58 46.5	10.455
8	23 27 8.46	2.1379	3 19 10.7	10.355	8	1 11 22.01	2.2156	5 9 13.1	10.432
9	23 29 16.76	2.1388	3 8 48.6	10.380	9	1 13 35.01	2.2178	5 19 38.3	10.407
10	23 31 25.12	2.1396	2 58 25.0	10.404	10	1 15 48.14	2.2201	5 30 2.0	10.382
11	23 33 33.54	2.1409	2 48 0.0	10.427	11	1 18 1.42	2.2223	5 40 24.1	10.356
12	23 35 42.03	2.1420	2 37 33.6	10.450	12	1 20 14.84	2.2246	5 50 44.6	10.328
13	23 37 50.58	2.1430	2 27 6.0	10.471	13	1 22 28.40	2.2272	6 1 3.4	10.299
14	23 39 59.19	2.1441	2 16 37.1	10.491	14	1 24 42.10	2.2296	6 11 20.5	10.269
15	23 42 7.87	2.1452	2 6 7.0	10.511	15	1 26 55.95	2.2321	6 21 35.7	10.238
16	23 44 16.62	2.1464	1 55 35.8	10.530	16	1 29 9.95	2.2345	6 31 49.0	10.206
17	23 46 25.44	2.1476	1 45 3.5	10.547	17	1 31 24.10	2.2370	6 42 0.4	10.173
18	23 48 34.34	2.1488	1 34 30.1	10.564	18	1 33 38.39	2.2396	6 52 9.8	10.139
19	23 50 43.30	2.1500	1 23 55.8	10.579	19	1 35 52.84	2.2420	7 2 17.1	10.103
20	23 52 52.34	2.1513	1 13 20.6	10.594	20	1 38 7.43	2.2445	7 12 22.2	10.067
21	23 55 1.46	2.1526	1 2 44.6	10.607	21	1 40 22.18	2.2472	7 22 25.1	10.029
22	23 57 10.66	2.1539	0 52 7.8	10.620	22	1 42 37.09	2.2496	7 32 25.7	9.990
23	23 59 19.93	2.1553	0 41 30.2	10.631	23	1 44 52.15	2.2524	7 42 23.9	9.950
24	0 1 29.29	2.1567	S. 0 30 52.0	10.643	24	1 47 7.37	2.2550	N. 7 52 19.7	9.909

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	1 47 ^h 7.37 ^m	2.3860	N. 7° 52' 19.7"	9.3009	0	3 38 36.32	2.3009	N. 14° 40' 13.2"	6.698
1	1 49 22.75	2.3876	8 2 13.0	9.367	1	3 40 59.85	2.3085	14 46 51.7	6.896
2	1 51 38.28	2.3903	8 12 3.8	9.324	2	3 43 23.54	2.3063	14 53 24.7	6.504
3	1 53 53.98	2.3930	8 21 51.9	9.780	3	3 45 47.40	2.3086	14 59 52.2	6.411
4	1 56 9.84	2.3967	8 31 37.3	9.735	4	3 48 11.41	2.4014	15 6 14.1	6.317
5	1 58 25.86	2.3994	8 41 20.0	9.688	5	3 50 35.57	2.4040	15 12 30.3	6.222
6	2 0 42.04	2.3711	8 50 59.9	9.640	6	3 52 59.89	2.4067	15 18 40.8	6.127
7	2 2 58.39	2.3738	9 0 36.9	9.592	7	3 55 24.37	2.4093	15 24 45.5	6.031
8	2 5 14.90	2.3765	9 10 10.9	9.543	8	3 57 49.00	2.4118	15 30 44.4	5.933
9	2 7 31.58	2.3794	9 19 41.9	9.491	9	4 0 13.78	2.4142	15 36 37.5	5.836
10	2 9 48.43	2.3822	9 29 9.8	9.439	10	4 2 38.70	2.4166	15 42 24.7	5.737
11	2 12 5.44	2.3850	9 38 34.6	9.386	11	4 5 3.77	2.4191	15 48 5.9	5.637
12	2 14 22.63	2.3878	9 47 56.2	9.332	12	4 7 28.99	2.4216	15 53 41.1	5.537
13	2 16 39.98	2.3907	9 57 14.5	9.276	13	4 9 54.35	2.4238	15 59 10.3	5.436
14	2 18 57.51	2.3935	10 6 29.4	9.220	14	4 12 19.85	2.4262	16 4 33.4	5.334
15	2 21 15.20	2.3963	10 15 40.9	9.163	15	4 14 45.49	2.4284	16 9 50.3	5.231
16	2 23 33.07	2.3992	10 24 48.9	9.104	16	4 17 11.26	2.4306	16 15 1.1	5.128
17	2 25 51.10	2.4020	10 33 53.4	9.048	17	4 19 37.16	2.4328	16 20 5.6	5.024
18	2 28 9.31	2.4049	10 42 54.3	8.984	18	4 22 3.20	2.4351	16 25 3.9	4.919
19	2 30 27.70	2.4078	10 51 51.5	8.923	19	4 24 29.37	2.4372	16 29 55.9	4.814
20	2 32 46.25	2.4107	11 0 44.9	8.860	20	4 26 55.67	2.4393	16 34 41.6	4.708
21	2 35 4.98	2.4137	11 9 34.6	8.795	21	4 29 22.09	2.4413	16 39 20.9	4.601
22	2 37 23.89	2.4166	11 18 20.4	8.731	22	4 31 48.63	2.4433	16 43 53.8	4.494
23	2 39 42.97	2.4194	N. 11° 27' 2.3"	8.665	23	4 34 15.29	2.4453	N. 16° 48' 20.2"	4.386
SUNDAY 10.					TUESDAY 12.				
0	2 42 2.22	2.4223	N. 11° 35' 40.2"	8.606	0	4 36 42.07	2.4472	N. 16° 52' 40.1"	4.278
1	2 44 21.65	2.4252	11 44 14.0	8.529	1	4 39 8.96	2.4491	16 56 53.5	4.168
2	2 46 41.25	2.4283	11 52 43.7	8.460	2	4 41 35.96	2.4509	17 1 0.3	4.060
3	2 49 1.03	2.4311	12 1 9.2	8.390	3	4 44 3.07	2.4527	17 5 0.5	3.947
4	2 51 20.98	2.4340	12 9 30.5	8.319	4	4 46 30.29	2.4545	17 8 54.1	3.837
5	2 53 41.11	2.4370	12 17 47.5	8.247	5	4 48 57.61	2.4562	17 12 41.0	3.736
6	2 56 1.42	2.4399	12 26 0.1	8.174	6	4 51 25.03	2.4578	17 16 21.2	3.615
7	2 58 21.90	2.4427	12 34 8.3	8.099	7	4 53 52.54	2.4593	17 19 54.7	3.502
8	3 0 42.55	2.4456	12 42 12.0	8.024	8	4 56 20.15	2.4609	17 23 21.5	3.389
9	3 3 3.37	2.4485	12 50 11.2	7.948	9	4 58 47.85	2.4624	17 26 41.5	3.276
10	3 5 24.37	2.4514	12 58 5.8	7.870	10	5 1 15.64	2.4638	17 29 54.7	3.163
11	3 7 45.54	2.4543	13 5 55.7	7.793	11	5 3 43.51	2.4652	17 33 1.0	3.048
12	3 10 6.89	2.4572	13 13 40.8	7.713	12	5 6 11.46	2.4666	17 36 0.4	2.934
13	3 12 28.41	2.4601	13 21 21.2	7.632	13	5 8 39.49	2.4677	17 38 53.0	2.819
14	3 14 50.10	2.4630	13 28 56.7	7.551	14	5 11 7.59	2.4689	17 41 38.6	2.703
15	3 17 11.97	2.4659	13 36 27.3	7.469	15	5 13 35.76	2.4701	17 44 17.3	2.587
16	3 19 34.00	2.4687	13 43 53.0	7.386	16	5 16 4.00	2.4712	17 46 49.0	2.471
17	3 21 56.21	2.4716	13 51 13.7	7.302	17	5 18 32.31	2.4722	17 49 13.8	2.356
18	3 24 18.59	2.4742	13 58 29.3	7.217	18	5 21 0.67	2.4732	17 51 31.6	2.238
19	3 26 41.12	2.4769	14 5 39.7	7.131	19	5 23 29.09	2.4742	17 53 42.4	2.121
20	3 29 3.82	2.4798	14 12 45.0	7.044	20	5 25 57.57	2.4751	17 55 46.1	2.004
21	3 31 26.70	2.4827	14 19 45.1	6.957	21	5 28 26.10	2.4759	17 57 42.8	1.886
22	3 33 49.74	2.4854	14 26 39.8	6.868	22	5 30 54.67	2.4768	17 59 32.4	1.768
23	3 36 12.95	2.4882	14 33 29.2	6.778	23	5 33 23.28	2.4772	18 1 15.0	1.650
24	3 38 36.32	2.4909	N. 14° 40' 13.2"	6.688	24	5 35 51.93	2.4778	N. 18° 2' 50.5"	1.533

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	5 35 51.93	2.4778	N.18 2 50.5	1.582	0	7 34 18.80	2.4841	N.17 0 14.8	4.002
1	5 38 20.61	2.4783	18 4 18.9	1.413	1	7 36 44.78	2.4817	16 56 8.5	4.189
2	5 40 49.32	2.4789	18 5 40.1	1.284	2	7 39 10.61	2.4794	16 51 55.7	4.266
3	5 43 18.07	2.4794	18 6 54.2	1.176	3	7 41 36.31	2.4771	16 47 36.6	4.372
4	5 45 46.85	2.4797	18 8 1.2	1.086	4	7 44 1.86	2.4748	16 43 11.1	4.477
5	5 48 15.64	2.4799	18 9 1.0	0.987	5	7 46 27.26	2.4721	16 38 39.3	4.583
6	5 50 44.44	2.4801	18 9 53.7	0.918	6	7 48 52.51	2.4696	16 34 1.3	4.686
7	5 53 13.25	2.4803	18 10 39.2	0.899	7	7 51 17.60	2.4670	16 29 17.1	4.789
8	5 55 42.08	2.4805	18 11 17.6	0.880	8	7 53 42.55	2.4644	16 24 26.7	4.891
9	5 58 10.91	2.4806	18 11 48.8	0.860	9	7 56 7.34	2.4617	16 19 30.1	4.992
10	6 0 39.75	2.4808	18 12 12.8	0.841	10	7 58 31.96	2.4591	16 14 27.5	5.094
11	6 3 8.58	2.4804	18 12 29.6	0.821	11	8 0 56.43	2.4564	16 9 18.9	5.196
12	6 5 37.40	2.4802	18 12 39.2	0.801	12	8 3 20.73	2.4536	16 4 4.2	5.294
13	6 8 6.21	2.4801	18 12 41.7	0.818	13	8 5 44.86	2.4508	15 58 43.6	5.393
14	6 10 35.01	2.4798	18 12 37.0	0.836	14	8 8 8.83	2.4480	15 53 17.1	5.491
15	6 13 3.79	2.4795	18 12 25.2	0.857	15	8 10 32.62	2.4452	15 47 44.7	5.588
16	6 15 32.55	2.4792	18 12 6.2	0.876	16	8 12 56.25	2.4423	15 42 6.5	5.686
17	6 18 1.29	2.4788	18 11 40.0	0.896	17	8 15 19.70	2.4392	15 36 22.5	5.780
18	6 20 30.00	2.4782	18 11 6.7	0.915	18	8 17 42.96	2.4362	15 30 32.8	5.875
19	6 22 58.67	2.4775	18 10 26.3	0.934	19	8 20 6.05	2.4333	15 24 37.5	5.969
20	6 25 27.30	2.4768	18 9 38.7	0.952	20	8 22 28.96	2.4304	15 18 36.6	6.061
21	6 27 55.89	2.4761	18 8 44.0	0.971	21	8 24 51.70	2.4273	15 12 30.1	6.154
22	6 30 24.43	2.4753	18 7 42.2	1.090	22	8 27 14.24	2.4242	15 6 18.1	6.246
23	6 32 52.93	2.4745	N.18 6 33.3	1.208	23	8 29 36.60	2.4213	N.15 0 0.7	6.336
THURSDAY 14.					SATURDAY 16.				
0	6 35 21.37	2.4736	N.18 5 17.2	1.326	0	8 31 58.78	2.4081	N.14 53 37.9	6.436
1	6 37 49.76	2.4728	18 3 54.1	1.444	1	8 34 20.77	2.4049	14 47 9.7	6.514
2	6 40 18.08	2.4719	18 2 23.9	1.562	2	8 36 42.57	2.4017	14 40 36.2	6.601
3	6 42 46.34	2.4709	18 0 46.7	1.679	3	8 39 4.18	2.3985	14 33 57.5	6.688
4	6 45 14.54	2.4698	17 59 2.4	1.796	4	8 41 25.59	2.3953	14 27 13.7	6.774
5	6 47 42.66	2.4681	17 57 11.1	1.913	5	8 43 46.81	2.3921	14 20 24.7	6.860
6	6 50 10.71	2.4669	17 55 12.8	2.029	6	8 46 7.84	2.3888	14 13 30.6	6.943
7	6 52 38.69	2.4656	17 53 7.5	2.146	7	8 48 28.68	2.3856	14 6 31.5	7.026
8	6 55 6.58	2.4641	17 50 55.3	2.261	8	8 50 49.32	2.3823	13 59 27.5	7.108
9	6 57 34.38	2.4626	17 48 36.2	2.377	9	8 53 9.76	2.3791	13 52 18.6	7.189
10	7 0 2.09	2.4611	17 46 10.1	2.492	10	8 55 30.01	2.3758	13 45 4.8	7.270
11	7 2 29.71	2.4596	17 43 37.2	2.606	11	8 57 50.06	2.3725	13 37 46.2	7.349
12	7 4 57.23	2.4578	17 40 57.4	2.721	12	9 0 9.91	2.3692	13 30 22.9	7.427
13	7 7 24.65	2.4562	17 38 10.8	2.834	13	9 2 29.56	2.3658	13 22 54.9	7.504
14	7 9 51.97	2.4545	17 35 17.3	2.948	14	9 4 49.01	2.3625	13 15 22.3	7.581
15	7 12 19.19	2.4527	17 32 17.1	3.060	15	9 7 8.26	2.3592	13 7 45.2	7.656
16	7 14 46.29	2.4509	17 29 10.1	3.173	16	9 9 27.31	2.3558	13 0 3.6	7.730
17	7 17 13.28	2.4490	17 25 56.4	3.284	17	9 11 46.16	2.3525	12 52 17.6	7.803
18	7 19 40.16	2.4469	17 22 36.0	3.396	18	9 14 4.81	2.3492	12 44 27.2	7.876
19	7 22 6.91	2.4448	17 19 8.9	3.508	19	9 16 23.26	2.3458	12 36 32.5	7.947
20	7 24 33.55	2.4426	17 15 35.2	3.617	20	9 18 41.50	2.3423	12 28 33.6	8.017
21	7 27 0.06	2.4407	17 11 54.9	3.726	21	9 20 59.54	2.3389	12 20 30.5	8.086
22	7 29 26.44	2.4386	17 8 8.1	3.835	22	9 23 17.38	2.3356	12 12 23.2	8.155
23	7 31 52.69	2.4363	17 4 14.7	3.944	23	9 25 35.01	2.3322	12 4 11.9	8.223
24	7 34 18.80	2.4341	N.17 0 14.8	4.052	24	9 27 52.44	2.3288	N.11 55 56.6	8.288

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	9 27 52.44	2.2686	N. 11 55 56.6	8.268	0	11 14 1.63	2.1410	N. 4 22 0.6	10.220
1	9 30 9.67	2.2684	11 47 37.4	8.383	1	11 16 10.01	2.1385	4 11 46.9	10.235
2	9 32 26.69	2.2690	11 39 14.3	8.417	2	11 18 18.25	2.1360	4 1 32.4	10.249
3	9 34 43.51	2.2787	11 30 47.3	8.480	3	11 20 26.33	2.1335	3 51 17.1	10.262
4	9 37 0.13	2.2758	11 22 16.6	8.542	4	11 22 34.27	2.1311	3 41 1.0	10.273
5	9 39 16.55	2.2730	11 13 42.2	8.603	5	11 24 42.06	2.1286	3 30 44.3	10.284
6	9 41 32.77	2.2696	11 5 4.2	8.663	6	11 26 49.70	2.1262	3 20 26.9	10.294
7	9 43 48.78	2.2662	10 56 22.6	8.722	7	11 28 57.20	2.1238	3 10 9.0	10.303
8	9 46 4.59	2.2619	10 47 37.6	8.780	8	11 31 4.55	2.1214	2 59 50.6	10.311
9	9 48 20.21	2.2596	10 38 49.1	8.836	9	11 33 11.77	2.1191	2 49 31.7	10.316
10	9 50 35.62	2.2562	10 29 57.3	8.892	10	11 35 18.85	2.1169	2 39 12.4	10.322
11	9 52 50.83	2.2518	10 21 2.1	8.946	11	11 37 25.80	2.1147	2 28 52.8	10.328
12	9 55 5.84	2.2468	10 12 3.7	9.000	12	11 39 32.61	2.1124	2 18 33.0	10.332
13	9 57 20.65	2.2432	10 3 2.1	9.052	13	11 41 39.29	2.1102	2 8 13.0	10.335
14	9 59 35.27	2.2400	9 53 57.4	9.104	14	11 43 45.84	2.1081	1 57 52.8	10.337
15	10 1 49.09	2.2367	9 44 49.7	9.154	15	11 45 52.26	2.1059	1 47 32.5	10.339
16	10 4 3.91	2.2354	9 35 39.0	9.203	16	11 47 58.55	2.1037	1 37 12.2	10.339
17	10 6 17.94	2.2322	9 26 25.4	9.251	17	11 50 4.71	2.1017	1 26 51.9	10.338
18	10 8 31.77	2.2289	9 17 8.9	9.298	18	11 52 10.76	2.0997	1 16 31.6	10.337
19	10 10 45.41	2.2257	9 7 49.6	9.344	19	11 54 16.68	2.0977	1 6 11.5	10.334
20	10 12 58.85	2.2224	8 58 27.6	9.389	20	11 56 22.48	2.0957	0 55 51.5	10.331
21	10 15 12.10	2.2192	8 49 2.9	9.433	21	11 58 28.17	2.0936	0 45 31.8	10.326
22	10 17 25.16	2.2161	8 39 35.6	9.476	22	12 0 33.74	2.0919	0 35 12.4	10.321
23	10 19 38.03	2.2129	N. 8 30 5.7	9.518	23	12 2 39.20	2.0900	N. 0 24 53.3	10.316
MONDAY 18.					WEDNESDAY 20.				
0	10 21 50.71	2.2096	N. 8 20 33.4	9.556	0	12 4 44.54	2.0881	N. 0 14 34.6	10.307
1	10 24 3.20	2.2067	8 10 58.7	9.598	1	12 6 49.77	2.0863	N. 0 4 16.4	10.299
2	10 26 15.51	2.2036	8 1 21.6	9.637	2	12 8 54.90	2.0846	S. 0 6 1.3	10.291
3	10 28 27.63	2.2004	7 51 42.3	9.674	3	12 10 59.92	2.0828	0 16 18.5	10.281
4	10 30 39.56	2.1974	7 42 0.7	9.711	4	12 13 4.84	2.0811	0 26 35.1	10.270
5	10 32 51.32	2.1944	7 32 17.0	9.746	5	12 15 9.65	2.0793	0 36 51.0	10.260
6	10 35 2.89	2.1913	7 22 31.2	9.780	6	12 17 14.36	2.0777	0 47 6.2	10.247
7	10 37 14.28	2.1883	7 12 43.4	9.813	7	12 19 18.98	2.0761	0 57 20.6	10.233
8	10 39 25.49	2.1853	7 2 53.6	9.846	8	12 21 23.49	2.0744	1 7 34.2	10.220
9	10 41 36.52	2.1823	6 53 1.9	9.877	9	12 23 27.91	2.0729	1 17 46.9	10.206
10	10 43 47.37	2.1794	6 43 8.4	9.907	10	12 25 32.24	2.0713	1 27 58.8	10.190
11	10 45 58.05	2.1766	6 33 13.1	9.936	11	12 27 36.47	2.0696	1 38 9.6	10.173
12	10 48 8.56	2.1737	6 23 16.0	9.964	12	12 29 40.62	2.0680	1 48 19.4	10.155
13	10 50 18.89	2.1708	6 13 17.3	9.991	13	12 31 44.68	2.0669	1 58 28.1	10.136
14	10 52 29.06	2.1680	6 3 17.0	10.017	14	12 33 48.65	2.0656	2 8 35.7	10.117
15	10 54 39.05	2.1652	5 53 15.2	10.042	15	12 35 52.54	2.0642	2 18 42.2	10.097
16	10 56 48.88	2.1625	5 43 12.0	10.066	16	12 37 56.35	2.0628	2 28 47.4	10.077
17	10 58 58.55	2.1597	5 33 7.3	10.089	17	12 40 0.07	2.0614	2 38 51.4	10.055
18	11 1 8.04	2.1569	5 23 1.3	10.111	18	12 42 3.72	2.0602	2 48 54.1	10.033
19	11 3 17.37	2.1542	5 12 54.0	10.131	19	12 44 7.30	2.0590	2 58 55.4	10.010
20	11 5 26.54	2.1516	5 2 45.5	10.151	20	12 46 10.80	2.0577	3 8 55.3	9.986
21	11 7 35.55	2.1488	4 52 35.8	10.170	21	12 48 14.22	2.0564	3 18 53.7	9.961
22	11 9 44.40	2.1463	4 42 25.1	10.187	22	12 50 17.57	2.0552	3 28 50.7	9.936
23	11 11 53.09	2.1436	4 32 13.3	10.204	23	12 52 20.85	2.0542	3 38 46.1	9.910
24	11 14 1.63	2.1410	N. 4 22 0.6	10.220	24	12 54 24.07	2.0531	S. 3 48 39.9	9.883

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	12 54 24.07	2.0631	S. 3° 48' 39.9	9.983	0	14 32 11.35	2.0809	S. 10° 58' 57.1	7.808
1	12 56 27.22	2.0620	3 58 32.0	9.855	1	14 34 13.21	2.0810	11 6 43.8	7.780
2	12 58 30.31	2.0609	4 8 22.5	9.827	2	14 36 15.07	2.0811	11 14 27.1	7.692
3	13 0 33.33	2.0499	4 18 11.2	9.798	3	14 38 16.93	2.0812	11 22 6.9	7.634
4	13 2 36.30	2.0489	4 27 58.2	9.768	4	14 40 18.81	2.0813	11 29 43.2	7.576
5	13 4 39.20	2.0479	4 37 43.4	9.737	5	14 42 20.69	2.0814	11 37 16.0	7.516
6	13 6 42.05	2.0470	4 47 26.7	9.706	6	14 44 22.58	2.0816	11 44 45.2	7.457
7	13 8 44.85	2.0461	4 57 8.1	9.674	7	14 46 24.49	2.0818	11 52 10.8	7.397
8	13 10 47.58	2.0452	5 6 47.6	9.641	8	14 48 26.40	2.0820	11 59 32.8	7.336
9	13 12 50.27	2.0444	5 16 25.1	9.607	9	14 50 28.33	2.0822	12 6 51.2	7.276
10	13 14 52.91	2.0436	5 26 0.5	9.573	10	14 52 30.27	2.0825	12 14 5.9	7.214
11	13 16 55.50	2.0428	5 35 33.8	9.538	11	14 54 32.23	2.0827	12 21 16.9	7.152
12	13 18 58.04	2.0420	5 45 5.0	9.502	12	14 56 34.20	2.0830	12 28 24.2	7.090
13	13 21 0.54	2.0412	5 54 34.1	9.466	13	14 58 36.19	2.0833	12 35 27.7	7.027
14	13 23 2.99	2.0405	6 4 1.0	9.429	14	15 0 38.19	2.0835	12 42 27.4	6.964
15	13 25 5.40	2.0398	6 13 25.6	9.392	15	15 2 40.21	2.0838	12 49 23.4	6.900
16	13 27 7.77	2.0391	6 22 48.0	9.355	16	15 4 42.25	2.0842	12 56 15.5	6.836
17	13 29 10.11	2.0388	6 32 8.0	9.318	17	15 6 44.31	2.0845	13 3 3.7	6.773
18	13 31 12.40	2.0380	6 41 25.7	9.278	18	15 8 46.39	2.0848	13 9 48.1	6.707
19	13 33 14.66	2.0374	6 50 41.0	9.238	19	15 10 48.49	2.0852	13 16 28.6	6.642
20	13 35 16.89	2.0368	6 59 53.9	9.194	20	15 12 50.61	2.0856	13 23 5.2	6.576
21	13 37 19.08	2.0363	7 9 4.3	9.152	21	15 14 52.76	2.0860	13 29 37.8	6.510
22	13 39 21.25	2.0358	7 18 12.2	9.110	22	15 16 54.93	2.0863	13 36 6.4	6.444
23	13 41 23.38	2.0353	S. 7° 27' 17.5	9.067	23	15 18 57.12	2.0867	S. 13° 42' 31.1	6.377
FRIDAY 22.					SUNDAY 24.				
0	13 43 25.49	2.0346	S. 7° 36' 20.2	9.034	0	15 20 59.33	2.0871	S. 13° 48' 51.7	6.310
1	13 45 27.57	2.0346	7 45 20.3	8.990	1	15 23 1.57	2.0875	13 55 8.3	6.243
2	13 47 29.63	2.0341	7 54 17.7	8.935	2	15 25 3.83	2.0879	14 1 20.8	6.175
3	13 49 31.66	2.0337	8 3 12.5	8.880	3	15 27 6.12	2.0884	14 7 29.2	6.106
4	13 51 33.67	2.0333	8 12 4.5	8.823	4	15 29 8.44	2.0888	14 13 33.5	6.038
5	13 53 35.66	2.0330	8 20 53.7	8.767	5	15 31 10.78	2.0892	14 19 33.7	5.969
6	13 55 37.63	2.0327	8 29 40.1	8.700	6	15 33 13.15	2.0897	14 25 29.7	5.899
7	13 57 39.58	2.0324	8 38 23.7	8.702	7	15 35 15.55	2.0402	14 31 21.6	5.830
8	13 59 41.52	2.0322	8 47 4.4	8.654	8	15 37 17.98	2.0407	14 37 9.3	5.760
9	14 1 43.44	2.0319	8 55 42.2	8.606	9	15 39 20.44	2.0412	14 42 52.8	5.689
10	14 3 45.35	2.0317	9 4 17.0	8.556	10	15 41 22.93	2.0417	14 48 32.1	5.619
11	14 5 47.27	2.0315	9 12 48.9	8.506	11	15 43 25.44	2.0422	14 54 7.1	5.548
12	14 7 49.13	2.0313	9 21 17.7	8.455	12	15 45 27.99	2.0427	14 59 37.8	5.477
13	14 9 51.00	2.0312	9 29 43.5	8.404	13	15 47 30.57	2.0432	15 5 4.3	5.406
14	14 11 52.87	2.0311	9 38 6.2	8.353	14	15 49 33.18	2.0437	15 10 26.4	5.333
15	14 13 54.73	2.0309	9 46 25.8	8.301	15	15 51 35.82	2.0442	15 15 44.2	5.260
16	14 15 56.58	2.0308	9 54 42.3	8.249	16	15 53 38.49	2.0447	15 20 57.6	5.188
17	14 17 58.43	2.0306	10 2 55.6	8.196	17	15 55 41.19	2.0452	15 26 6.7	5.115
18	14 20 0.28	2.0306	10 11 5.7	8.141	18	15 57 43.92	2.0458	15 31 11.4	5.042
19	14 22 2.12	2.0307	10 19 12.5	8.087	19	15 59 46.69	2.0464	15 36 11.7	4.968
20	14 24 3.97	2.0307	10 27 16.1	8.032	20	16 1 49.49	2.0470	15 41 7.6	4.894
21	14 26 5.81	2.0307	10 35 16.4	7.977	21	16 3 52.33	2.0475	15 45 59.0	4.820
22	14 28 7.65	2.0307	10 43 13.3	7.921	22	16 5 55.19	2.0480	15 50 46.0	4.746
23	14 30 9.50	2.0308	10 51 6.9	7.865	23	16 7 58.09	2.0487	15 55 28.5	4.672
24	14 32 11.35	2.0309	S. 10° 58' 57.1	7.808	24	16 10 1.03	2.0493	S. 16° 0' 6.6	4.597

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	16 10 1.03	2.0493	S. 16° 0' 6.6	4.597	0	17 49 1.08	2.0746	S. 18° 10' 13.4	0.738
1	16 12 4.00	2.0498	16 4 40.1	4.521	1	17 51 5.57	2.0751	18 10 56.4	0.678
2	16 14 7.00	2.0503	16 9 9.1	4.446	2	17 53 10.09	2.0756	18 11 34.4	0.601
3	16 16 10.04	2.0509	16 13 33.6	4.370	3	17 55 14.62	2.0768	18 12 7.4	0.507
4	16 18 13.11	2.0514	16 17 53.5	4.294	4	17 57 19.18	2.0772	18 12 35.3	0.424
5	16 20 16.21	2.0520	16 22 8.8	4.218	5	17 59 23.77	2.0786	18 12 58.2	0.346
6	16 22 19.35	2.0527	16 26 19.6	4.141	6	18 1 28.38	2.0770	18 13 16.1	0.286
7	16 24 22.53	2.0533	16 30 25.8	4.066	7	18 3 33.01	2.0773	18 13 29.0	0.172
8	16 26 25.74	2.0538	16 34 27.4	3.988	8	18 5 37.66	2.0777	18 13 36.8	0.089
9	16 28 28.98	2.0543	16 38 24.4	3.911	9	18 7 42.33	2.0780	18 13 39.6	0.004
10	16 30 32.25	2.0548	16 42 16.7	3.833	10	18 9 47.02	2.0784	18 13 37.3	0.079
11	16 32 35.56	2.0555	16 46 4.4	3.756	11	18 11 51.74	2.0788	18 13 30.0	0.163
12	16 34 38.91	2.0561	16 49 47.4	3.677	12	18 13 56.48	2.0792	18 13 17.7	0.247
13	16 36 42.29	2.0566	16 53 25.7	3.599	13	18 16 1.24	2.0795	18 13 0.3	0.332
14	16 38 45.70	2.0573	16 56 59.3	3.521	14	18 18 6.02	2.0797	18 12 37.9	0.416
15	16 40 49.15	2.0578	17 0 28.2	3.443	15	18 20 10.81	2.0800	18 12 10.4	0.500
16	16 42 52.63	2.0583	17 3 52.4	3.364	16	18 22 15.62	2.0803	18 11 37.9	0.584
17	16 44 56.15	2.0589	17 7 11.9	3.285	17	18 24 20.45	2.0807	18 11 0.3	0.668
18	16 46 59.70	2.0594	17 10 26.6	3.206	18	18 26 25.30	2.0810	18 10 17.7	0.762
19	16 49 3.28	2.0600	17 13 36.6	3.127	19	18 28 30.17	2.0813	18 9 30.0	0.837
20	16 51 6.90	2.0606	17 16 41.8	3.047	20	18 30 35.05	2.0815	18 8 37.3	0.921
21	16 53 10.55	2.0613	17 19 42.3	2.968	21	18 32 39.95	2.0818	18 7 39.5	1.006
22	16 55 14.24	2.0618	17 22 38.0	2.888	22	18 34 44.87	2.0821	18 6 36.7	1.089
23	16 57 17.96	2.0623	S. 17° 25' 28.9	2.808	23	18 36 49.80	2.0823	S. 18° 5' 28.8	1.173
TUESDAY 26.					THURSDAY 28.				
0	16 59 21.71	2.0628	S. 17° 28' 14.9	2.727	0	18 38 54.75	2.0826	S. 18° 4' 15.9	1.267
1	17 1 25.50	2.0633	17 30 56.1	2.647	1	18 40 59.71	2.0828	18 2 57.9	1.342
2	17 3 29.31	2.0639	17 33 32.5	2.566	2	18 43 4.69	2.0831	18 1 34.9	1.426
3	17 5 33.17	2.0645	17 36 4.1	2.486	3	18 45 9.68	2.0833	18 0 6.8	1.510
4	17 7 37.05	2.0650	17 38 30.8	2.406	4	18 47 14.68	2.0835	17 58 33.7	1.594
5	17 9 40.97	2.0655	17 40 52.7	2.324	5	18 49 19.70	2.0837	17 56 55.5	1.678
6	17 11 44.91	2.0660	17 43 9.7	2.242	6	18 51 24.73	2.0840	17 55 12.3	1.762
7	17 13 48.89	2.0665	17 45 21.8	2.161	7	18 53 29.78	2.0842	17 53 24.1	1.846
8	17 15 52.91	2.0671	17 47 29.0	2.080	8	18 55 34.83	2.0843	17 51 30.8	1.930
9	17 17 56.95	2.0676	17 49 31.4	1.998	9	18 57 39.90	2.0845	17 49 32.5	2.014
10	17 20 1.02	2.0681	17 51 28.8	1.916	10	18 59 44.98	2.0847	17 47 29.2	2.097
11	17 22 5.12	2.0687	17 53 21.3	1.834	11	19 1 50.07	2.0849	17 45 20.9	2.181
12	17 24 9.26	2.0692	17 55 8.9	1.752	12	19 3 55.17	2.0851	17 43 7.5	2.265
13	17 26 13.42	2.0697	17 56 51.5	1.669	13	19 6 0.28	2.0853	17 40 49.1	2.348
14	17 28 17.62	2.0703	17 58 29.2	1.586	14	19 8 5.40	2.0854	17 38 25.7	2.432
15	17 30 21.84	2.0708	18 0 2.0	1.505	15	19 10 10.53	2.0856	17 35 57.3	2.515
16	17 32 26.09	2.0711	18 1 29.8	1.422	16	19 12 15.67	2.0857	17 33 23.9	2.599
17	17 34 30.37	2.0716	18 2 52.7	1.339	17	19 14 20.82	2.0859	17 30 45.5	2.683
18	17 36 34.68	2.0720	18 4 10.6	1.257	18	19 16 25.98	2.0861	17 28 2.1	2.766
19	17 38 39.01	2.0724	18 5 23.5	1.174	19	19 18 31.15	2.0862	17 25 13.7	2.848
20	17 40 43.37	2.0729	18 6 31.4	1.091	20	19 20 36.32	2.0863	17 22 20.3	2.931
21	17 42 47.76	2.0734	18 7 34.4	1.007	21	19 22 41.51	2.0865	17 19 21.9	3.014
22	17 44 52.18	2.0738	18 8 32.4	0.925	22	19 24 46.70	2.0866	17 16 18.5	3.097
23	17 46 56.62	2.0742	18 9 25.4	0.843	23	19 26 51.90	2.0867	17 13 10.2	3.180
24	17 49 1.08	2.0746	S. 18° 10' 13.4	0.768	24	19 28 57.11	2.0868	S. 17° 9' 56.9	3.263

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 29.					SUNDAY 31.				
0	19 28 57.11	2.0866	S. 17° 0' 56.9	3.263	0	21 9 15.90	2.0042	S. 13° 1' 38.3	6.990
1	19 31 2.32	2.0870	17 6 38.7	3.245	1	21 11 21.56	2.0045	12 54 36.8	7.060
2	19 33 7.55	2.0872	17 3 15.5	3.427	2	21 13 27.24	2.0048	12 47 31.1	7.130
3	19 35 12.78	2.0873	16 59 47.4	3.510	3	21 15 32.94	2.0052	12 40 21.2	7.200
4	19 37 18.01	2.0873	16 56 14.4	3.593	4	21 17 38.66	2.0056	12 33 7.1	7.269
5	19 39 23.26	2.0875	16 52 36.4	3.674	5	21 19 44.41	2.0060	12 25 48.9	7.338
6	19 41 28.51	2.0876	16 48 53.5	3.755	6	21 21 50.18	2.0062	12 18 26.5	7.407
7	19 43 33.77	2.0877	16 45 5.7	3.837	7	21 23 55.96	2.0065	12 11 0.0	7.475
8	19 45 39.03	2.0878	16 41 13.1	3.918	8	21 26 1.76	2.0069	12 3 29.5	7.543
9	19 47 44.30	2.0879	16 37 15.6	4.000	9	21 28 7.59	2.0074	11 55 55.0	7.609
10	19 49 49.58	2.0880	16 33 13.2	4.081	10	21 30 13.45	2.0079	11 48 16.4	7.676
11	19 51 54.86	2.0881	16 29 5.9	4.162	11	21 32 19.34	2.0083	11 40 33.8	7.743
12	19 54 0.15	2.0882	16 24 53.7	4.243	12	21 34 25.25	2.0087	11 32 47.3	7.809
13	19 56 5.44	2.0883	16 20 36.7	4.323	13	21 36 31.19	2.0092	11 24 56.8	7.874
14	19 58 10.74	2.0884	16 16 14.9	4.404	14	21 38 37.16	2.0097	11 17 2.4	7.939
15	20 0 16.05	2.0886	16 11 48.3	4.484	15	21 40 43.15	2.1002	11 9 4.1	8.003
16	20 2 21.37	2.0887	16 7 16.9	4.564	16	21 42 49.18	2.1007	11 1 2.0	8.067
17	20 4 26.69	2.0888	16 2 40.7	4.644	17	21 44 55.24	2.1013	10 52 56.1	8.131
18	20 6 32.02	2.0889	15 57 59.7	4.723	18	21 47 1.34	2.1018	10 44 46.4	8.194
19	20 8 37.35	2.0889	15 53 13.9	4.802	19	21 49 7.46	2.1024	10 36 32.9	8.256
20	20 10 42.69	2.0891	15 48 23.4	4.882	20	21 51 13.62	2.1030	10 28 15.7	8.318
21	20 12 48.04	2.0892	15 43 28.1	4.961	21	21 53 19.82	2.1036	10 19 54.8	8.379
22	20 14 53.39	2.0893	15 38 28.1	5.040	22	21 55 26.06	2.1042	10 11 30.2	8.440
23	20 16 58.75	2.0894	S. 15° 33' 23.3	5.118	23	21 57 32.33	2.1048	S. 10° 3' 2.0	8.501
SATURDAY 30.					MONDAY, APRIL 1.				
0	20 19 4.12	2.0895	S. 15° 28' 13.8	5.197	0	21 59 38.64	2.1055	S. 9° 54' 30.1	8.561
1	20 21 9.49	2.0897	15 22 59.7	5.275	PHASES OF THE MOON.				
2	20 23 14.88	2.0898	15 17 40.9	5.352					
3	20 25 20.27	2.0899	15 12 17.4	5.430					
4	20 27 25.67	2.0900	15 6 49.3	5.507					
5	20 29 31.07	2.0901	15 1 16.6	5.584	● New Moon, 5 21 38.1 ☾ First Quarter, 12 20 47.3 ○ Full Moon, 19 20 55.3 ☾ Last Quarter, 27 19 45.9				
6	20 31 36.49	2.0903	14 55 39.2	5.661					
7	20 33 41.91	2.0905	14 49 57.2	5.737					
8	20 35 47.35	2.0907	14 44 10.7	5.813					
9	20 37 52.79	2.0908	14 38 19.6	5.889	☾ Perigee, 12 10.9 ☾ Apogee, 26 16.6				
10	20 39 58.24	2.0910	14 32 24.0	5.965					
11	20 42 3.71	2.0912	14 26 23.8	6.040					
12	20 44 9.18	2.0913	14 20 19.1	6.115					
13	20 46 14.67	2.0915	14 14 9.9	6.190					
14	20 48 20.16	2.0917	14 7 56.2	6.265					
15	20 50 25.67	2.0920	14 1 38.1	6.339					
16	20 52 31.20	2.0922	13 55 15.6	6.413					
17	20 54 36.74	2.0924	13 48 48.6	6.486					
18	20 56 42.29	2.0926	13 42 17.3	6.559					
19	20 58 47.85	2.0928	13 35 41.6	6.631					
20	21 0 53.42	2.0931	13 29 1.6	6.704					
21	21 2 59.02	2.0934	13 22 17.2	6.776					
22	21 5 4.63	2.0937	13 15 28.5	6.847					
23	21 7 10.26	2.0939	13 8 35.5	6.919					
24	21 9 15.90	2.0942	S. 13° 1' 38.3	6.990					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Spica	W.	81° 39' 50"	3000	83° 9' 51"	3001	84° 40' 3"	2992	86° 10' 26"	2983
	Saturn	W.	49 17 38	3003	50 47 47	2994	52 18 7	2988	53 48 39	2976
	Antares	W.	36 44 30	3106	38 11 20	3147	39 38 33	3129	41 6 8	3110
	SUN	E.	57 10 12	3372	55 47 24	3364	54 24 26	3364	53 1 17	3344
2	Spica	W.	93 45 17	2934	95 16 53	2923	96 48 43	2912	98 20 47	2901
	Saturn	W.	61 24 19	2926	62 56 6	2914	64 28 8	2902	66 0 23	2891
	Antares	W.	48 29 19	3028	49 58 57	3013	51 28 54	2997	52 59 10	2982
	SUN	E.	46 2 32	3260	44 38 8	3278	43 13 31	3266	41 48 40	3253
3	Spica	W.	106 4 44	2843	107 38 16	2831	109 12 4	2819	110 46 7	2807
	Saturn	W.	73 45 24	2831	75 19 10	2819	76 53 13	2807	78 27 32	2796
	Antares	W.	60 35 13	2908	62 7 21	2894	63 39 48	2880	65 12 34	2866
	SUN	E.	34 46 43	3190	33 14 22	3177	31 47 45	3163	30 20 52	3150
8	SUN	W.	26 23 31	2717	27 59 48	2710	29 36 14	2704	31 12 49	2696
	Mars	E.	89 16 17	2497	87 35 0	2491	85 53 35	2485	84 12 0	2479
	Pollux	E.	97 44 1	2479	96 2 18	2472	94 20 25	2465	92 38 22	2458
9	SUN	W.	39 17 56	2607	40 55 21	2602	42 32 52	2597	44 10 29	2592
	Mars	E.	75 42 17	2456	74 0 2	2453	72 17 42	2449	70 35 17	2446
	Pollux	E.	84 6 4	2483	82 23 16	2479	80 40 22	2476	78 57 24	2472
	Regulus	E.	120 17 8	2362	118 32 24	2348	116 47 34	2343	115 2 37	2339
10	SUN	W.	52 20 0	2634	53 58 9	2631	55 36 22	2628	57 14 38	2626
	Mars	E.	62 2 22	2437	60 19 40	2437	58 36 57	2436	56 54 15	2437
	Pollux	E.	70 21 38	2414	68 38 23	2413	66 55 7	2413	65 11 51	2414
	Regulus	E.	106 16 27	2331	104 30 58	2319	102 45 25	2316	100 59 49	2313
11	SUN	W.	65 26 50	2615	67 5 24	2614	68 43 59	2613	70 22 36	2613
	α Arietis	W.	24 45 27	3066	26 14 31	2966	27 45 27	2889	29 17 59	2828
	Mars	E.	48 21 2	2445	46 38 32	2449	44 56 8	2453	43 13 49	2450
	Pollux	E.	56 36 1	2436	54 53 4	2430	53 10 12	2435	51 27 27	2441
	Regulus	E.	92 10 58	2304	90 25 5	2302	88 39 9	2301	86 53 12	2300
12	SUN	W.	78 36 0	2609	80 14 43	2609	81 53 26	2609	83 32 9	2609
	α Arietis	W.	37 17 27	2829	38 55 43	2804	40 34 34	2692	42 13 54	2663
	Mars	E.	34 44 34	2502	33 3 23	2516	31 22 32	2532	29 42 2	2551
	Pollux	E.	42 56 19	2488	41 14 49	2502	39 33 39	2519	37 52 52	2537
	Regulus	E.	78 3 9	2298	76 17 7	2298	74 31 5	2298	72 45 3	2298
13	SUN	W.	91 45 41	2611	93 24 21	2612	95 3 0	2613	96 41 37	2614
	α Arietis	W.	50 36 8	2486	52 17 24	2489	53 58 52	2489	55 40 31	2476
	Aldebaran	W.	16 14 14	2296	18 0 19	2297	19 46 23	2298	21 32 25	2299
	Regulus	E.	63 55 0	2302	62 9 3	2303	60 23 7	2304	58 37 13	2305
	Spica	E.	117 23 38	2313	115 37 57	2313	113 52 16	2313	112 6 36	2314
14	SUN	W.	104 54 18	2621	106 32 44	2624	108 11 7	2626	109 49 27	2628
	α Arietis	W.	64 10 40	2454	65 52 58	2452	67 35 19	2450	69 17 42	2449
	Aldebaran	W.	30 22 14	2305	32 8 5	2307	33 53 54	2309	35 39 40	2311
	Regulus	E.	49 48 16	2314	48 2 37	2316	46 17 1	2319	44 31 29	2322
	Spica	E.	103 18 35	2320	101 33 4	2323	99 47 36	2323	98 2 10	2325
15	SUN	W.	118 0 18	2641	119 38 17	2644	121 16 12	2648	122 54 2	2652
	α Arietis	W.	77 49 49	2450	79 32 12	2462	81 14 33	2454	82 56 51	2456

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
1	Spica	W.	87° 41' 0"	2973	89° 11' 46"	2964	90° 42' 44"	2954	92° 13' 54"	2944
	Saturn	W.	55 19 22	2966	56 50 17	2966	58 21 25	2946	59 52 45	2936
	Antares	W.	42 34 5	3093	44 2 23	3076	45 31 2	3060	47 0 0	3044
	SUN	E.	51 37 56	3333	50 14 23	3323	48 50 39	3313	47 26 42	3301
2	Spica	W.	99 53 5	2990	101 25 38	2978	102 58 25	2966	104 31 27	2956
	Saturn	W.	67 32 53	2980	69 5 38	2966	70 38 36	2956	72 11 53	2944
	Antares	W.	54 29 45	2967	56 0 39	2962	57 31 52	2938	59 3 23	2923
	SUN	E.	40 23 34	3242	38 58 14	3239	37 32 39	3216	36 6 49	3203
3	Spica	W.	112 20 26	2796	113 55 1	2782	115 29 52	2770	117 4 59	2758
	Saturn	W.	80 2 7	2782	81 36 59	2769	83 12 8	2756	84 47 33	2744
	Antares	W.	66 45 38	2861	68 19 0	2837	69 52 41	2823	71 26 40	2808
	SUN	E.	28 53 43	3137	27 26 18	3123	25 58 36	3110	24 30 38	3096
8	SUN	W.	32 49 34	2689	34 26 28	2684	36 3 29	2678	37 40 39	2672
	Mars	E.	82 30 18	2474	80 48 28	2469	79 6 31	2464	77 24 27	2460
	Pollux	E.	90 56 10	2463	89 13 50	2447	87 31 22	2442	85 48 46	2437
9	SUN	W.	45 48 13	2648	47 26 2	2645	49 3 57	2641	50 41 56	2636
	Mars	E.	68 52 48	2443	67 10 15	2441	65 27 40	2440	63 45 2	2438
	Pollux	E.	77 14 21	2419	75 31 14	2417	73 48 4	2416	72 4 52	2415
	Regulus	E.	113 17 34	2335	111 32 25	2331	109 47 11	2326	108 1 52	2324
10	SUN	W.	58 52 59	2623	60 31 23	2621	62 9 49	2619	63 48 18	2617
	Mars	E.	55 11 33	2439	53 28 52	2439	51 46 12	2441	50 3 36	2443
	Pollux	E.	63 28 36	2415	61 45 23	2417	60 2 12	2419	58 19 5	2422
	Regulus	E.	99 14 8	2311	97 28 25	2309	95 42 39	2307	93 56 50	2306
11	SUN	W.	72 1 15	2611	73 39 55	2610	75 18 36	2610	76 57 17	2609
	α Arietis	W.	30 51 52	2773	32 26 55	2729	34 2 57	2690	35 39 51	2686
	Mars	E.	41 31 38	2466	39 49 35	2472	38 7 43	2480	36 26 2	2480
	Pollux	E.	49 44 50	2448	48 2 24	2466	46 20 8	2466	44 38 6	2476
	Regulus	E.	85 7 13	2300	83 21 13	2299	81 35 13	2299	79 49 11	2296
12	SUN	W.	85 10 52	2609	86 49 25	2610	88 28 17	2610	90 6 59	2610
	α Arietis	W.	43 53 40	2646	45 33 49	2632	47 14 18	2619	48 55 5	2607
	Mars	E.	28 1 59	2674	26 22 27	2692	24 43 35	2636	23 5 29	2676
	Pollux	E.	36 12 30	2660	34 32 40	2666	32 53 24	2616	31 14 49	2649
	Regulus	E.	70 59 1	2299	69 12 59	2299	67 26 59	2300	65 40 59	2301
13	SUN	W.	98 20 13	2615	99 58 48	2617	101 37 20	2618	103 15 50	2620
	α Arietis	W.	57 22 19	2470	59 4 15	2466	60 46 18	2460	62 28 26	2466
	Aldebaran	W.	23 18 26	2800	25 4 26	2801	26 50 24	2803	28 36 20	2804
	Regulus	E.	56 51 21	2307	55 5 31	2306	53 19 43	2310	51 33 58	2312
	Spica	E.	110 20 57	2316	108 35 19	2316	106 49 43	2317	105 4 8	2318
14	SUN	W.	111 27 44	2630	113 5 58	2633	114 44 8	2635	116 22 15	2636
	α Arietis	W.	71 0 7	2448	72 42 33	2448	74 24 59	2448	76 7 25	2449
	Aldebaran	W.	37 25 24	2313	39 11 3	2316	40 56 39	2319	42 42 12	2322
	Regulus	E.	42 46 0	2324	41 0 36	2326	39 15 17	2331	37 30 3	2335
	Spica	E.	96 16 47	2327	94 31 28	2330	92 46 12	2333	91 0 59	2335
15	SUN	W.	124 31 47	2655	126 9 27	2659	127 47 2	2663	129 24 31	2666
	α Arietis	W.	84 39 6	2469	86 21 16	2462	88 3 23	2466	89 45 24	2470

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
15	Aldebaran W.	44° 27' 40"	2224	46° 13' 5"	2227	47° 58' 25"	2230	49° 43' 41"	2233
	Regulus E.	35 44 54	2239	33 59 51	2243	32 14 54	2246	30 30 5	2253
	Spica E.	89 15 50	2237	87 30 45	2241	85 45 45	2244	84 0 49	2247
16	SUN W.	131 1 55	2672	132 39 12	2677	134 16 23	2682	135 53 27	2687
	α Arietis W.	91 27 19	2475	93 9 9	2480	94 50 51	2486	96 32 26	2490
	Aldebaran W.	58 28 42	2233	60 13 25	2237	61 58 1	2243	63 42 31	2246
	Mars W.	22 49 56	2166	24 26 28	2169	26 3 36	2172	27 41 13	2174
	Spica E.	75 17 30	2208	73 33 9	2212	71 48 54	2217	70 4 46	2221
	Saturn E.	107 29 5	2349	105 44 17	2354	103 59 36	2359	102 15 2	2363
17	α Arietis W.	104 58 9	2225	106 38 46	2234	108 19 12	2243	109 59 25	2253
	Aldebaran W.	72 23 9	2204	74 6 52	2207	75 50 26	2211	77 33 51	2215
	Mars W.	35 53 50	2207	37 32 49	2208	39 11 51	2214	40 50 54	2219
	Pollux W.	30 35 43	2127	32 11 47	2134	33 48 22	2141	35 25 24	2149
	Spica E.	61 26 7	2412	59 42 50	2419	57 59 43	2426	56 16 46	2433
	Saturn E.	93 33 59	2200	91 50 10	2206	90 6 30	2213	88 22 59	2219
	Antares E.	107 5 29	2461	105 23 21	2466	103 41 20	2472	101 59 27	2477
18	Aldebaran W.	86 8 28	2480	87 50 51	2486	89 33 3	2497	91 15 3	2475
	Mars W.	49 5 38	2610	50 44 18	2615	52 22 53	2621	54 1 20	2626
	Pollux W.	43 34 32	2609	45 12 48	2626	46 51 7	2636	48 29 26	2626
	Spica E.	47 44 47	2476	46 3 0	2486	44 21 27	2496	42 40 8	2506
	Saturn E.	79 47 52	2446	78 5 23	2454	76 23 5	2462	74 40 58	2471
	Antares E.	93 32 16	2612	91 51 20	2620	90 10 35	2629	88 30 1	2636
19	Aldebaran W.	99 41 57	2602	101 22 40	2601	103 3 10	2611	104 43 26	2611
	Mars W.	62 11 15	2606	63 48 42	2614	65 25 57	2623	67 3 0	2622
	Pollux W.	56 40 31	2643	58 18 28	2648	59 56 18	2655	61 33 59	2661
	Regulus W.	19 45 48	2681	21 25 37	2686	23 5 19	2692	24 44 53	2696
	Spica E.	34 17 25	2586	32 37 44	2591	30 58 23	2596	29 19 23	2602
	Saturn E.	66 13 33	2617	64 32 43	2627	62 52 7	2637	61 11 45	2647
	Antares E.	80 10 21	2686	78 31 6	2696	76 52 5	2707	75 13 19	2718
20	Mars W.	75 4 54	2744	76 40 35	2756	78 16 1	2767	79 51 12	2779
	Pollux W.	69 39 57	2702	71 16 35	2711	72 53 0	2721	74 29 12	2731
	Regulus W.	33 0 8	2621	34 38 34	2632	36 16 46	2642	37 54 45	2652
	Saturn E.	52 53 34	2601	51 14 41	2613	49 36 3	2624	47 57 42	2636
	Antares E.	67 3 28	2680	65 26 21	2692	63 49 31	2706	62 12 59	2720
21	Mars W.	87 43 17	2828	89 16 54	2832	90 50 16	2841	92 23 21	2856
	Pollux W.	82 26 46	2786	84 1 33	2797	85 36 6	2806	87 10 23	2820
	Regulus W.	46 0 59	2707	47 37 28	2719	49 13 43	2731	50 49 41	2743
	Saturn E.	39 49 54	2697	38 13 10	2710	36 36 42	2722	35 0 32	2735
	Antares E.	54 15 5	2796	52 40 30	2811	51 6 16	2828	49 32 24	2845
	α Aquilæ E.	102 53 2	3148	101 25 51	3156	99 58 48	3163	98 31 55	3173
22	Pollux W.	94 57 56	2881	96 30 39	2894	98 3 7	2905	99 35 18	2918
	Regulus W.	58 45 46	2801	60 20 11	2812	61 54 23	2825	63 28 19	2836
	Antares E.	41 48 52	2940	40 17 24	2943	38 46 24	2956	37 15 52	2969
	α Aquilæ E.	91 20 12	3228	89 54 30	3236	88 29 1	3247	87 3 47	3259
	Venus E.	110 6 19	3306	108 40 17	3319	107 14 30	3332	105 48 59	3345
	Jupiter E.	118 33 40	2878	117 0 53	2890	115 28 21	2901	113 56 4	2913
23	Pollux W.	107 12 19	2901	108 42 55	2923	110 13 16	2936	111 43 22	2948

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
15	Aldebaran W.	51° 28' 51"	2337	53° 13' 57"	2340	54° 58' 57"	2344	56° 43' 52"	2348
	Regulus E.	28 45 23	2359	27 0 50	2366	25 16 27	2373	23 32 14	2382
	Spica E.	82 15 58	2340	80 31 12	2335	78 46 32	2330	77 1 58	2323
16	Sun W.	137 30 24	2692	139 7 14	2698	140 43 56	2704	142 20 30	2710
	α Arietis W.	98 13 53	2497	99 55 12	2503	101 36 21	2510	103 17 20	2517
	Aldebaran W.	65 26 54	2373	67 11 9	2377	68 55 17	2382	70 39 17	2386
	Mars W.	29 19 14	2626	30 57 34	2616	32 36 9	2606	34 14 55	2600
	Spica E.	68 20 46	2386	66 36 54	2384	64 53 10	2380	63 9 34	2376
	Saturn E.	100 30 34	2368	98 46 14	2373	97 2 1	2379	95 17 56	2384
17	α Arietis W.	111 39 24	2564	113 19 10	2574	114 58 40	2586	116 37 54	2596
	Aldebaran W.	79 17 7	2420	81 0 13	2426	82 43 8	2435	84 25 53	2443
	Mars W.	42 29 57	2696	44 8 58	2699	45 47 55	2701	47 26 48	2706
	Pollux W.	37 2 46	2686	38 40 25	2646	40 18 18	2639	41 56 21	2632
	Spica E.	54 33 59	2441	52 51 23	2430	51 8 59	2426	49 26 47	2427
	Saturn E.	86 39 37	2416	84 56 25	2423	83 13 24	2431	81 30 33	2438
	Antares E.	100 17 42	2484	98 36 6	2490	96 54 40	2497	95 13 23	2504
18	Aldebaran W.	92 56 51	2484	94 38 27	2493	96 19 50	2502	98 1 0	2512
	Mars W.	55 39 38	2693	57 17 47	2640	58 55 47	2649	60 33 36	2657
	Pollux W.	50 7 46	2628	51 46 3	2630	53 24 17	2633	55 2 27	2636
	Spica E.	40 59 3	2517	39 18 13	2529	37 37 40	2541	35 57 23	2554
	Saturn E.	72 59 4	2480	71 17 22	2489	69 35 53	2497	67 54 36	2507
	Antares E.	86 49 40	2546	85 9 31	2555	83 29 34	2565	81 49 51	2574
19	Aldebaran W.	106 23 28	2592	108 3 15	2573	109 42 48	2583	111 22 6	2594
	Mars W.	68 39 50	2703	70 16 27	2713	71 52 50	2723	73 28 59	2734
	Pollux W.	63 11 32	2696	64 48 55	2676	66 26 7	2684	68 3 8	2692
	Regulus W.	26 24 18	2686	28 3 33	2693	29 42 36	2692	41 21 26	2613
	Spica E.	27 40 45	2631	26 2 32	2650	24 24 45	2671	22 47 26	2693
	Saturn E.	59 31 37	2598	57 51 44	2599	56 12 5	2590	54 32 42	2591
	Antares E.	73 34 49	2629	71 56 34	2641	70 18 35	2654	68 40 53	2666
20	Mars W.	81 26 8	2790	83 0 49	2802	84 35 14	2815	86 9 23	2826
	Pollux W.	76 5 11	2741	77 40 56	2763	79 16 27	2763	80 51 43	2774
	Regulus W.	39 32 29	2693	41 9 59	2674	42 47 14	2686	44 24 14	2696
	Spica E.	46 19 36	2648	44 41 46	2660	43 4 12	2672	41 26 55	2684
	Antares E.	60 36 46	2786	59 0 52	2749	57 25 16	2763	55 50 1	2779
21	Mars W.	93 56 11	2890	95 28 43	2903	97 0 59	2914	98 33 0	2927
	Pollux W.	88 44 24	2832	90 18 11	2844	91 51 41	2856	93 24 56	2869
	Regulus W.	52 25 25	2784	54 0 54	2766	55 36 7	2778	57 11 4	2789
	Saturn E.	33 24 38	2747	31 49 1	2761	30 13 42	2774	28 38 39	2787
	Antares E.	47 58 55	2862	46 25 48	2881	44 53 4	2900	43 20 45	2920
	α Aquilæ E.	97 5 11	3190	95 38 38	3190	94 12 17	3200	92 46 8	3211
22	Pollux W.	101 7 14	2981	102 38 54	2943	104 10 18	2966	105 41 26	2989
	Regulus W.	65 2 0	2647	66 35 27	2660	68 8 42	2689	69 41 37	2691
	Antares E.	35 45 50	3094	34 16 20	3063	32 47 24	3092	31 19 5	3124
	α Aquilæ E.	85 38 49	3273	84 14 6	3287	82 49 39	3301	81 25 29	3316
	Venus E.	104 23 43	3369	102 58 41	3270	101 33 55	3262	100 9 23	3256
	Jupiter E.	112 24 2	2924	110 52 14	2936	109 20 41	2947	107 49 22	2968
23	Pollux W.	113 13 12	3031	114 42 46	3043	116 12 5	3066	117 41 9	3089

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
23	Regulus W.	71° 14' 20"	2892	72° 46' 49"	2902	74° 19' 5"	2912	75° 51' 7"	2924
	α Aquilæ E.	80 1 36	3332	78 38 0	3347	77 14 43	3363	75 51 44	3379
	Venus E.	98 45 6	3307	97 21 3	3319	95 57 14	3331	94 33 38	3343
	Jupiter E.	106 18 17	2969	104 47 26	2981	103 16 49	2991	101 46 25	3001
24	Regulus W.	83 28 9	2971	84 58 58	2980	86 29 35	2989	88 0 2	2997
	Spica W.	30 10 12	3018	31 40 2	3023	33 9 46	3028	34 39 23	3033
	α Aquilæ E.	69 1 45	3470	67 40 46	3490	66 20 11	3511	64 59 59	3534
	Venus E.	87 38 53	3396	86 16 33	3406	84 54 23	3415	83 32 24	3424
	Jupiter E.	94 17 34	3060	92 48 23	3059	91 19 23	3068	89 50 34	3076
	Fomalhaut E.	101 24 31	3338	100 1 4	3345	98 37 44	3350	97 14 30	3356
	Sun E.	131 45 54	3336	130 22 23	3345	128 59 4	3354	127 35 55	3364
25	Regulus W.	95 29 53	3033	96 59 25	3039	98 28 50	3044	99 58 8	3050
	Spica W.	42 6 0	3057	43 35 2	3062	45 3 58	3066	46 32 49	3070
	α Aquilæ E.	58 25 10	3652	57 7 32	3680	55 50 23	3709	54 33 46	3740
	Venus E.	76 44 56	3465	75 23 53	3471	74 2 57	3478	72 42 8	3484
	Jupiter E.	82 28 50	3112	81 0 55	3118	79 33 8	3124	78 5 27	3129
	Fomalhaut E.	90 20 2	3396	88 57 30	3393	87 35 5	3399	86 12 47	3406
	Sun E.	120 42 35	3402	119 20 20	3408	117 58 14	3415	116 36 14	3420
26	Spica W.	53 55 57	3085	55 24 25	3087	56 52 51	3088	58 21 15	3089
	Saturn W.	21 56 26	3072	23 25 10	3073	24 53 54	3073	26 22 37	3073
	Venus E.	65 59 33	3506	64 39 16	3509	63 19 3	3512	61 58 52	3515
	Jupiter E.	70 48 30	3149	69 21 21	3153	67 54 14	3154	66 27 10	3156
	Fomalhaut E.	79 23 7	3438	78 1 33	3445	76 40 7	3451	75 18 48	3456
	Sun E.	109 47 39	3442	108 26 10	3445	107 4 44	3446	105 43 20	3448
27	Spica W.	65 43 8	3087	67 11 33	3086	68 39 59	3084	70 8 28	3082
	Saturn W.	33 46 22	3068	35 15 11	3066	36 44 3	3063	38 12 57	3060
	Venus E.	55 18 20	3516	53 58 14	3515	52 38 7	3514	51 17 58	3512
	Jupiter E.	59 12 10	3168	57 45 10	3167	56 18 9	3165	54 51 6	3163
	Fomalhaut E.	68 34 14	3495	67 13 44	3503	65 53 23	3512	64 33 12	3520
	Sun E.	98 56 40	3449	97 35 19	3448	96 13 57	3446	94 52 33	3444
28	Spica W.	77 31 50	3082	79 0 45	3087	80 29 48	3082	81 58 57	3046
	Saturn W.	45 38 34	3039	47 7 58	3034	48 37 28	3028	50 7 6	3022
	Venus E.	44 36 27	3492	43 15 55	3488	41 55 17	3482	40 34 33	3476
	Jupiter E.	47 35 6	3137	46 7 41	3132	44 40 11	3127	43 12 34	3121
	Fomalhaut E.	57 54 53	3374	56 35 49	3367	55 17 0	3361	53 58 27	3357
	Sun E.	88 4 41	3424	86 42 52	3419	85 20 57	3413	83 58 55	3406
29	Spica W.	89 26 49	3007	90 56 53	2996	92 27 8	2989	93 57 34	2982
	Saturn W.	57 37 25	2963	59 7 59	2974	60 38 44	2965	62 9 40	2956
	Fomalhaut E.	47 30 34	3724	46 14 12	3722	44 58 20	3726	43 43 3	3722
	Sun E.	77 6 38	3365	75 43 41	3355	74 20 33	3345	72 57 14	3336
30	Spica W.	101 32 56	2926	103 4 42	2914	104 36 43	2901	106 9 0	2889
	Saturn W.	69 47 42	2900	71 20 1	2887	72 52 36	2876	74 25 27	2862
	Antares W.	56 7 42	3000	57 37 55	2985	59 8 27	2969	60 39 18	2954
	Sun E.	65 57 28	3276	64 32 49	3263	63 7 54	3250	61 42 43	3236
31	Saturn W.	82 13 55	2794	83 48 31	2780	85 23 25	2766	86 58 39	2750
	Antares W.	68 18 22	2877	69 51 11	2861	71 24 19	2845	72 57 48	2829
	Sun E.	54 32 39	3163	53 5 45	3147	51 38 32	3132	50 11 1	3116

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Regulus W.	77° 22' 57"	2934	78° 54' 33"	2943	80° 25' 57"	2963	81° 57' 9"	2993
	α Aquilæ E.	74 29 4	2997	73 6 44	2415	71 44 43	2432	70 23 3	2451
	Venus E.	93 10 16	2324	91 47 7	2366	90 24 10	2376	89 1 26	2386
	Jupiter E.	100 16 14	2012	98 46 16	2022	97 16 30	2031	95 46 56	2041
24	Regulus W.	89 30 19	2005	91 0 26	2012	92 30 23	2019	94 0 12	2026
	Spica W.	36 8 55	2039	37 38 20	2043	39 7 39	2048	40 36 53	2053
	α Aquilæ E.	63 40 12	2655	62 20 47	2677	61 1 48	2681	59 43 15	2626
	Venus E.	82 10 35	2433	80 48 56	2442	79 27 27	2450	78 6 7	2458
	Jupiter E.	88 21 55	2093	86 53 25	2091	85 25 5	2099	83 56 54	2106
	Fomalhaut E.	95 51 22	2362	94 28 22	2368	93 5 28	2374	91 42 42	2380
	SUN E.	126 12 56	2372	124 50 7	2380	123 27 28	2387	122 4 57	2395
25	Regulus W.	101 27 20	2056	102 56 25	2059	104 25 25	2063	105 54 20	2066
	Spica W.	48 1 35	2074	49 30 16	2078	50 58 53	2080	52 27 27	2083
	α Aquilæ E.	53 17 41	2772	52 2 9	2807	50 47 14	2844	49 32 56	2863
	Venus E.	71 21 26	2439	70 0 50	2495	68 40 20	2499	67 19 54	2503
	Jupiter E.	76 37 53	2134	75 10 24	2138	73 43 2	2143	72 15 44	2147
	Fomalhaut E.	84 50 36	2412	83 28 33	2418	82 6 37	2424	80 44 48	2431
	SUN E.	115 14 20	2425	113 52 32	2431	112 30 50	2435	111 9 12	2439
26	Spica W.	59 49 38	2090	61 18 0	2090	62 46 22	2090	64 14 45	2089
	Saturn W.	27 51 20	2072	29 20 4	2071	30 48 48	2070	32 17 34	2069
	Venus E.	60 38 43	2315	59 18 36	2316	57 58 30	2317	56 38 25	2317
	Jupiter E.	65 0 8	2158	63 33 8	2158	62 6 8	2158	60 39 9	2158
	Fomalhaut E.	73 57 37	2465	72 36 34	2472	71 15 39	2480	69 54 52	2488
	SUN E.	104 21 58	2450	103 0 38	2461	101 39 19	2461	100 18 0	2450
27	Spica W.	71 37 0	2079	73 5 36	2075	74 34 16	2072	76 3 0	2067
	Saturn W.	39 41 56	2057	41 10 58	2063	42 40 5	2049	44 9 16	2045
	Venus E.	49 57 47	2309	48 37 33	2306	47 17 15	2302	45 56 53	2296
	Jupiter E.	53 24 1	2161	51 56 53	2148	50 29 41	2145	49 2 26	2141
	Fomalhaut E.	63 13 10	2430	61 53 19	2439	60 33 38	2450	59 14 9	2452
	SUN E.	93 31 7	2441	92 9 37	2438	90 48 3	2434	89 26 25	2430
28	Spica W.	83 28 14	2039	84 57 39	2031	86 27 13	2024	87 56 56	2016
	Saturn W.	51 36 52	2015	53 6 46	2008	54 36 49	2000	56 7 2	2002
	Venus E.	39 13 43	2470	37 52 45	2463	36 31 39	2456	35 10 25	2447
	Jupiter E.	41 44 50	2115	40 16 58	2109	38 48 59	2101	37 20 51	2094
	Fomalhaut E.	52 40 11	2384	51 22 13	2383	50 4 36	2375	48 47 22	2368
	SUN E.	82 36 45	2399	81 14 27	2391	79 52 0	2383	78 29 24	2374
29	Spica W.	95 28 12	2069	96 59 3	2060	98 30 7	2049	100 1 24	2037
	Saturn W.	63 40 50	2045	65 12 12	2034	66 43 48	2023	68 15 38	2012
	Fomalhaut E.	42 28 24	2363	41 14 27	2311	40 1 17	2303	38 49 1	4023
	SUN E.	71 33 44	2325	70 10 1	2313	68 46 4	2301	67 21 54	2288
30	Spica W.	107 41 33	2076	109 14 22	2063	110 47 28	2050	112 20 51	2036
	Saturn W.	75 58 34	2049	77 31 58	2036	79 5 39	2022	80 39 38	2006
	Antares W.	62 10 28	2099	63 41 57	2024	65 13 46	2009	66 45 54	2003
	SUN E.	60 17 16	2322	58 51 33	2306	57 25 32	2103	55 59 15	2178
31	Saturn W.	88 34 12	2735	90 10 5	2720	91 46 18	2705	93 22 51	2689
	Antares W.	74 31 38	2613	76 5 49	2707	77 40 21	2701	79 15 13	2756
	SUN E.	48 43 10	2100	47 15 0	2063	45 46 30	2067	44 17 40	2051

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	subtracted from Apparent Time.				
							m		s		
Mon.	1	0 41 33.51	9.102	N. 4 28 26.2	57.90	16 2.09	64.50	4 2.42	0.755		
Tues.	2	0 45 11.97	9.107	4 51 33.0	57.69	16 1.81	64.52	3 44.37	0.749		
Wed.	3	0 48 50.54	9.112	5 14 34.7	57.47	16 1.53	64.54	3 26.44	0.744		
Thur.	4	0 52 29.26	9.118	5 37 30.9	57.23	16 1.25	64.56	3 8.65	0.738		
Fri.	5	0 56 8.14	9.125	6 0 21.2	56.98	16 0.97	64.58	2 51.03	0.731		
Sat.	6	0 59 47.19	9.132	6 23 5.2	56.71	16 0.70	64.61	2 33.58	0.723		
Sun.	7	1 3 26.43	9.140	6 45 42.5	56.43	16 0.43	64.64	2 16.32	0.715		
Mon.	8	1 7 5.88	9.149	7 8 13.0	56.13	16 0.16	64.67	1 59.27	0.706		
Tues.	9	1 10 45.55	9.159	7 30 36.3	55.82	15 59.89	64.71	1 42.43	0.696		
Wed.	10	1 14 25.46	9.169	7 52 51.9	55.49	15 59.62	64.75	1 25.82	0.686		
Thur.	11	1 18 5.62	9.180	8 14 59.4	55.15	15 59.35	64.79	1 9.46	0.676		
Fri.	12	1 21 46.04	9.192	8 36 58.4	54.79	15 59.09	64.83	0 53.38	0.665		
Sat.	13	1 25 26.74	9.204	8 58 48.8	54.42	15 58.82	64.88	0 37.58	0.652		
Sun.	14	1 29 7.76	9.217	9 20 30.3	54.04	15 58.56	64.93	0 22.09	0.639		
Mon.	15	1 32 49.09	9.231	9 42 2.6	53.65	15 58.29	64.98	0 6.91	0.625		
Tues.	16	1 36 30.74	9.245	10 3 25.2	53.24	15 58.03	65.04	0 7.94	0.611		
Wed.	17	1 40 12.76	9.260	10 24 37.7	52.82	15 57.77	65.09	0 22.44	0.596		
Thur.	18	1 43 55.16	9.276	10 45 39.8	52.38	15 57.51	65.15	0 36.56	0.580		
Fri.	19	1 47 37.95	9.293	11 6 31.4	51.93	15 57.25	65.21	0 50.28	0.564		
Sat.	20	1 51 21.15	9.310	11 27 12.0	51.47	15 56.99	65.27	1 3.60	0.547		
Sun.	21	1 55 4.77	9.328	11 47 41.4	50.99	15 56.73	65.33	1 16.50	0.528		
Mon.	22	1 58 48.84	9.347	12 7 59.2	50.50	15 56.47	65.39	1 28.95	0.509		
Tues.	23	2 2 33.37	9.367	12 28 5.1	50.00	15 56.21	65.45	1 40.94	0.489		
Wed.	24	2 6 18.38	9.387	12 47 58.8	49.48	15 55.95	65.52	1 52.45	0.469		
Thur.	25	2 10 3.87	9.408	13 7 40.0	48.95	15 55.69	65.59	2 3.48	0.449		
Fri.	26	2 13 49.85	9.429	13 27 8.2	48.41	15 55.44	65.66	2 14.02	0.428		
Sat.	27	2 17 36.35	9.450	13 46 23.3	47.86	15 55.18	65.73	2 24.05	0.406		
Sun.	28	2 21 23.39	9.472	14 5 25.0	47.29	15 54.93	65.81	2 33.54	0.384		
Mon.	29	2 25 10.96	9.494	14 24 13.0	46.71	15 54.68	65.88	2 42.50	0.362		
Tues.	30	2 26 59.05	9.516	14 42 46.8	46.11	15 54.44	65.96	2 50.94	0.341		
Wed.	31	2 32 47.68	9.539	N.15 1 6.0	45.50	15 54.20	66.04	2 58.84	0.317		

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from	Diff. for 1 hour	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour			
		^h ^m ^s	^s	N. [°] ['] ["]	["]	^m ^s	^s	^h ^m ^s
Mon.	1	0 41 32.90	9.102	N. 4 26 22.3	57.90	4 2.47	0.755	0 37 30.43
Tues.	2	0 45 11.40	9.107	4 51 29.4	57.69	3 44.42	0.749	0 41 26.98
Wed.	3	0 48 50.02	9.112	5 14 31.4	57.47	3 26.49	0.744	0 45 23.53
Thur.	4	0 52 28.78	9.118	5 37 27.9	57.23	3 8.70	0.738	0 49 20.08
Fri.	5	0 56 7.70	9.125	6 0 18.4	56.98	2 51.06	0.731	0 53 16.64
Sat.	6	0 59 46.80	9.132	6 23 2.7	56.71	2 33.61	0.723	0 57 13.19
Sun.	7	1 3 26.09	9.140	6 45 40.4	56.43	2 16.35	0.715	1 1 9.74
Mon.	8	1 7 5.58	9.149	7 8 11.2	56.13	1 59.29	0.706	1 5 6.29
Tues.	9	1 10 45.29	9.159	7 30 34.7	55.82	1 42.45	0.696	1 9 2.84
Wed.	10	1 14 25.24	9.169	7 52 50.5	55.40	1 25.84	0.686	1 12 59.40
Thur.	11	1 18 5.43	9.190	8 14 58.3	55.15	1 9.48	0.676	1 16 55.95
Fri.	12	1 21 45.89	9.192	8 36 57.6	54.79	0 53.39	0.665	1 20 52.50
Sat.	13	1 25 26.64	9.204	8 58 48.3	54.42	0 37.59	0.652	1 24 49.05
Sun.	14	1 29 7.70	9.217	9 20 30.0	54.04	0 22.09	0.639	1 28 45.61
Mon.	15	1 32 49.07	9.231	9 42 2.5	53.65	0 6.91	0.625	1 32 42.16
Tues.	16	1 36 30.77	9.245	10 3 25.3	53.24	0 7.94	0.611	1 36 38.71
Wed.	17	1 40 12.82	9.260	10 24 38.0	52.82	0 22.44	0.596	1 40 35.26
Thur.	18	1 43 55.25	9.276	10 45 40.3	52.38	0 36.57	0.580	1 44 31.82
Fri.	19	1 47 38.08	9.293	11 6 32.1	51.93	0 50.29	0.564	1 48 28.37
Sat.	20	1 51 21.31	9.310	11 27 12.9	51.47	1 3.61	0.549	1 52 24.92
Sun.	21	1 55 4.97	9.328	11 47 42.5	50.99	1 16.51	0.533	1 56 21.48
Mon.	22	1 58 49.07	9.347	12 8 0.4	50.50	1 28.96	0.509	2 0 18.03
Tues.	23	2 2 33.63	9.367	12 28 6.4	50.00	1 40.95	0.489	2 4 14.58
Wed.	24	2 6 18.67	9.387	12 48 0.3	49.48	1 52.47	0.469	2 8 11.14
Thur.	25	2 10 4.19	9.408	13 7 41.6	48.95	2 3.50	0.449	2 12 7.69
Fri.	26	2 13 50.20	9.429	13 27 10.0	48.41	2 14.04	0.428	2 16 4.24
Sat.	27	2 17 36.73	9.450	13 46 25.3	47.86	2 24.07	0.406	2 20 0.80
Sun.	28	2 21 23.79	9.472	14 5 27.1	47.29	2 33.56	0.384	2 23 57.35
Mon.	29	2 25 11.38	9.494	14 24 15.1	46.71	2 42.52	0.362	2 27 53.90
Tues.	30	2 28 59.50	9.516	14 42 49.0	46.11	2 50.96	0.341	2 31 50.46
Wed.	31	2 32 48.15	9.539	N.15 1 8.3	45.50	2 58.86	0.317	2 35 47.01

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	91	11° 18' 18.2	18' 8.4	147.90	+0.31	9.9999594	53.0	23 ^h 18 ^m 39.81 ^s
2	92	12 17 27.0	17 17.1	147.83	0.18	0.0000862	52.7	23 14 43.91
3	93	13 16 33.9	16 23.9	147.75	+0.04	.0002124	52.4	23 10 48.00
4	94	14 15 38.8	15 28.7	147.66	—0.09	.0003378	52.1	23 6 52.09
5	95	15 14 41.6	14 31.5	147.57	0.20	.0004625	51.7	23 2 56.18
6	96	16 13 42.3	13 32.1	147.48	0.29	.0005863	51.4	22 59 0.27
7	97	17 12 40.8	12 30.5	147.39	0.37	.0007093	51.1	22 55 4.36
8	98	18 11 37.1	11 26.7	147.30	0.42	.0008316	50.8	22 51 8.46
9	99	19 10 31.2	10 20.7	147.21	0.44	.0009582	50.5	22 47 12.56
10	100	20 9 23.1	9 12.6	147.11	0.43	.0010742	50.3	22 43 16.66
11	101	21 8 12.7	8 2.1	147.02	0.38	.0011947	50.1	22 39 20.75
12	102	22 6 59.9	6 49.2	146.92	0.31	.0013148	50.0	22 35 24.84
13	103	23 5 44.9	5 34.1	146.83	0.22	.0014345	49.8	22 31 28.93
14	104	24 4 27.7	4 16.8	146.74	—0.10	.0015589	49.7	22 27 33.02
15	105	25 3 8.3	2 57.3	146.65	+0.03	.0016780	49.6	22 23 37.11
16	106	26 1 46.7	1 35.6	146.55	0.16	.0017919	49.5	22 19 41.21
17	107	27 0 22.9	0 11.7	146.46	0.30	.0019107	49.5	22 15 45.31
18	108	27 58 57.0	58 45.7	146.38	0.43	.0020295	49.5	22 11 49.40
19	109	28 57 29.2	57 17.8	146.30	0.54	.0021483	49.5	22 7 53.50
20	110	29 55 59.6	55 48.1	146.23	0.63	.0022669	49.4	22 3 57.59
21	111	30 54 28.2	54 16.6	146.15	0.70	.0023854	49.3	22 0 1.68
22	112	31 52 55.0	52 43.3	146.08	0.74	.0025037	49.2	21 56 5.78
23	113	32 51 20.2	51 8.4	146.01	0.75	.0026216	49.0	21 52 9.87
24	114	33 49 43.6	49 31.7	145.94	0.73	.0027391	48.8	21 48 13.96
25	115	34 48 5.4	47 53.4	145.87	0.68	.0028561	48.5	21 44 18.05
26	116	35 46 25.7	46 13.6	145.81	0.61	.0029723	48.2	21 40 22.15
27	117	36 44 44.5	44 32.3	145.75	0.51	.0030875	47.8	21 36 26.24
28	118	37 43 1.7	42 49.4	145.69	0.39	.0032017	47.3	21 32 30.33
29	119	38 41 17.4	41 5.0	145.63	0.26	.0033147	46.7	21 28 34.42
30	120	39 39 31.6	39 19.1	145.56	0.13	.0034263	46.1	21 24 38.51
31	121	40 37 44.3	37 31.7	145.50	+0.00	0.0035363	45.5	21 20 42.61

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.		
1	15' 25.4	15' 31.6	56' 29.7	+1.88	56' 52.6	+1.93	^h 22 ^m 5.2	^m 2.03	^d 26.1	
2	15 38.0	15 44.3	57 15.8	1.94	57 39.0	1.91	22 54.3	2.07	27.1	
3	15 50.5	15 56.3	58 1.6	1.84	58 23.1	1.74	23 44.6	2.13	28.1	
4	16 1.6	16 6.6	58 43.1	1.59	59 1.2	1.41			29.1	
5	16 11.0	16 14.6	59 17.0	1.21	59 30.2	0.98	0 36.6	2.20	0.6	
6	16 17.4	16 19.4	59 40.6	0.74	59 48.0	0.50	1 30.5	2.20	1.6	
7	16 20.6	16 21.1	59 52.5	+0.26	59 54.2	+0.03	2 26.5	2.37	2.6	
8	16 20.8	16 19.9	59 53.2	-0.19	59 49.6	-0.39	3 24.2	2.42	3.6	
9	16 18.3	16 16.2	59 43.8	0.57	59 36.1	0.72	4 22.8	2.44	4.6	
10	16 13.6	16 10.6	59 26.6	0.85	59 15.8	0.95	5 21.3	2.41	5.6	
11	16 7.4	16 3.9	59 3.9	1.03	58 51.2	1.09	6 18.6	2.34	6.6	
12	16 0.3	15 56.5	58 37.8	1.13	58 24.0	1.17	7 13.9	2.25	7.6	
13	15 52.7	15 48.8	58 9.8	1.19	57 55.4	1.21	8 6.7	2.15	8.6	
14	15 44.8	15 40.8	57 40.7	1.22	57 26.0	1.23	8 57.2	2.06	9.6	
15	15 36.7	15 32.7	57 11.2	1.24	56 56.3	1.24	9 45.8	2.00	10.6	
16	15 28.6	15 24.6	56 41.4	1.24	56 26.5	1.23	10 33.0	1.95	11.6	
17	15 20.5	15 16.6	56 11.8	1.22	55 57.2	1.20	11 19.4	1.92	12.6	
18	15 12.7	15 8.9	55 43.0	1.17	55 29.1	1.14	12 5.4	1.92	13.6	
19	15 5.3	15 1.8	55 15.7	1.09	55 3.1	1.02	12 51.5	1.93	14.6	
20	14 58.6	14 55.7	54 51.3	0.94	54 40.5	0.85	13 38.0	1.94	15.6	
21	14 53.1	14 50.8	54 30.9	0.74	54 22.7	0.62	14 24.8	1.96	16.6	
22	14 49.0	14 47.7	54 16.1	0.48	54 11.3	-0.32	15 12.0	1.97	17.6	
23	14 47.0	14 46.8	54 8.4	-0.15	54 7.7	+0.03	15 59.3	1.97	18.6	
24	14 47.2	14 48.2	54 9.2	+0.22	54 13.0	0.42	16 46.7	1.97	19.6	
25	14 49.9	14 52.3	54 19.2	0.62	54 27.9	0.83	17 33.9	1.96	20.6	
26	14 55.3	14 59.1	54 39.1	1.04	54 52.9	1.25	18 20.9	1.96	21.6	
27	15 3.5	15 8.5	55 9.0	1.44	55 27.5	1.63	19 7.8	1.96	22.6	
28	15 14.1	15 20.3	55 48.2	1.80	56 10.8	1.96	19 55.0	1.98	23.6	
29	15 26.9	15 33.9	56 35.1	2.09	57 0.8	2.19	20 42.8	2.02	24.6	
30	15 41.2	15 48.5	57 27.5	2.24	57 54.6	2.25	21 31.8	2.08	25.6	
31	15 55.8	16 3.0	58 21.4	+2.21	58 47.6	+2.13	22 22.7	2.17	26.6	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 1.					WEDNESDAY 3.				
0	21 59 38.64	2.1080	S. 9 54 30.1	8.561	0	23 41 54.61	2.1684	S. 2 7 4.7	10.628
1	22 1 44.99	2.1082	9 45 54.7	8.620	1	23 44 4.59	2.1678	1 56 26.5	10.648
2	22 3 51.39	2.1080	9 37 15.7	8.678	2	23 46 14.69	2.1693	1 45 46.9	10.670
3	22 5 57.82	2.1076	9 28 33.2	8.737	3	23 48 24.91	2.1718	1 35 6.1	10.691
4	22 8 4.30	2.1084	9 19 47.3	8.794	4	23 50 35.25	2.1738	1 24 24.0	10.711
5	22 10 10.83	2.1091	9 10 58.0	8.851	5	23 52 45.71	2.1753	1 13 40.8	10.730
6	22 12 17.40	2.1099	9 2 5.2	8.907	6	23 54 56.29	2.1778	1 2 56.5	10.747
7	22 14 24.02	2.1107	8 53 9.1	8.963	7	23 57 6.99	2.1794	0 52 11.1	10.764
8	22 16 30.69	2.1116	8 44 9.7	9.018	8	23 59 17.82	2.1816	0 41 24.8	10.780
9	22 18 37.41	2.1126	8 35 7.0	9.073	9	0 1 28.78	2.1837	0 30 37.5	10.796
10	22 20 44.19	2.1133	8 26 1.0	9.128	10	0 3 39.87	2.1869	0 19 49.4	10.808
11	22 22 51.01	2.1142	8 16 51.8	9.180	11	0 5 51.09	2.1881	S. 0 9 0.5	10.821
12	22 24 57.89	2.1161	8 7 39.4	9.232	12	0 8 2.44	2.1903	N. 0 1 49.1	10.832
13	22 27 4.82	2.1161	7 58 23.9	9.284	13	0 10 13.93	2.1926	0 12 39.4	10.843
14	22 29 11.82	2.1171	7 49 5.3	9.336	14	0 12 25.55	2.1948	0 23 30.3	10.853
15	22 31 18.87	2.1180	7 39 43.6	9.386	15	0 14 37.31	2.1972	0 34 21.7	10.861
16	22 33 25.98	2.1190	7 30 18.9	9.436	16	0 16 49.21	2.1995	0 45 13.6	10.869
17	22 35 33.15	2.1201	7 20 51.2	9.485	17	0 19 1.25	2.2019	0 56 5.9	10.876
18	22 37 40.39	2.1212	7 11 20.6	9.534	18	0 21 13.44	2.2043	1 6 58.6	10.886
19	22 39 47.69	2.1223	7 1 47.1	9.582	19	0 23 25.77	2.2067	1 17 51.5	10.894
20	22 41 55.06	2.1234	6 52 10.8	9.629	20	0 25 38.24	2.2092	1 28 44.6	10.897
21	22 44 2.50	2.1245	6 42 31.7	9.675	21	0 27 50.87	2.2117	1 39 37.9	10.899
22	22 46 10.00	2.1267	6 32 49.8	9.721	22	0 30 3.64	2.2142	1 50 31.2	10.899
23	22 48 17.58	2.1268	S. 6 23 5.2	9.766	23	0 32 16.57	2.2167	N. 2 1 24.6	10.899
TUESDAY 2.					THURSDAY 4.				
0	22 50 25.22	2.1280	S. 6 13 17.9	9.810	0	0 34 29.65	2.2192	N. 2 12 17.9	10.897
1	22 52 32.94	2.1293	6 3 27.9	9.864	1	0 36 42.88	2.2218	2 23 11.0	10.894
2	22 54 40.73	2.1306	5 53 35.4	9.907	2	0 38 56.27	2.2246	2 34 3.9	10.890
3	22 56 48.61	2.1319	5 43 40.3	9.938	3	0 41 9.82	2.2271	2 44 56.6	10.876
4	22 58 56.56	2.1332	5 33 42.8	9.980	4	0 43 23.53	2.2297	2 55 48.9	10.869
5	23 1 4.59	2.1345	5 23 42.8	10.020	5	0 45 37.39	2.2324	3 6 40.8	10.861
6	23 3 12.70	2.1359	5 13 40.4	10.059	6	0 47 51.42	2.2352	3 17 32.3	10.853
7	23 5 20.90	2.1373	5 3 35.7	10.098	7	0 50 5.62	2.2380	3 28 23.2	10.843
8	23 7 29.18	2.1387	4 53 28.7	10.136	8	0 52 19.98	2.2408	3 39 13.5	10.833
9	23 9 37.55	2.1402	4 43 19.4	10.173	9	0 54 34.51	2.2435	3 50 3.1	10.820
10	23 11 46.01	2.1417	4 33 7.9	10.209	10	0 56 49.20	2.2463	4 0 51.9	10.806
11	23 13 54.55	2.1432	4 22 54.3	10.245	11	0 59 4.06	2.2492	4 11 39.9	10.794
12	23 16 3.19	2.1447	4 12 38.5	10.280	12	1 1 19.10	2.2521	4 22 26.9	10.776
13	23 18 11.92	2.1463	4 2 20.7	10.313	13	1 3 34.31	2.2549	4 33 12.9	10.758
14	23 20 20.75	2.1479	3 52 0.9	10.346	14	1 5 49.69	2.2578	4 43 57.9	10.740
15	23 22 29.67	2.1495	3 41 39.1	10.378	15	1 8 5.24	2.2607	4 54 41.7	10.720
16	23 24 38.69	2.1512	3 31 15.5	10.409	16	1 10 20.97	2.2637	5 5 24.3	10.700
17	23 26 47.81	2.1529	3 20 50.0	10.440	17	1 12 36.88	2.2667	5 16 5.6	10.678
18	23 28 57.04	2.1546	3 10 22.7	10.469	18	1 14 52.97	2.2697	5 26 45.6	10.655
19	23 31 6.36	2.1563	2 59 53.7	10.497	19	1 17 9.24	2.2726	5 37 24.2	10.630
20	23 33 15.79	2.1581	2 49 23.0	10.525	20	1 19 25.68	2.2756	5 48 1.2	10.604
21	23 35 25.33	2.1599	2 38 50.7	10.551	21	1 21 42.31	2.2787	5 58 36.7	10.577
22	23 37 34.98	2.1617	2 28 16.9	10.577	22	1 23 59.12	2.2817	6 9 10.5	10.549
23	23 39 44.74	2.1636	2 17 41.5	10.602	23	1 26 16.12	2.2848	6 19 42.6	10.519
24	23 41 54.61	2.1654	S. 2 7 4.7	10.625	24	1 28 33.30	2.2879	N. 6 30 12.8	10.489

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 5.					SUNDAY 7.				
0	1 ^h 28 ^m 33.30 ^s	2.2879	N. 6° 30' 12.8"	10.438	0	3 ^h 22 ^m 3.27 ^s	2.4892	N. 13° 54' 3.3"	7.531
1	1 30 50.67	2.2910	6 40 41.1	10.446	1	3 24 29.71	2.4420	14 1 32.4	7.440
2	1 33 8.22	2.2943	6 51 7.5	10.453	2	3 26 56.31	2.4447	14 8 56.1	7.348
3	1 35 25.96	2.2975	7 1 31.8	10.398	3	3 29 23.08	2.4475	14 16 14.2	7.256
4	1 37 43.89	2.3004	7 11 54.0	10.392	4	3 31 50.01	2.4502	14 23 26.8	7.162
5	1 40 2.01	2.3036	7 22 14.0	10.315	5	3 34 17.10	2.4528	14 30 33.7	7.067
6	1 42 20.32	2.3067	7 32 31.8	10.377	6	3 36 44.35	2.4556	14 37 34.9	6.972
7	1 44 38.82	2.3099	7 42 47.3	10.237	7	3 39 11.76	2.4581	14 44 30.3	6.875
8	1 46 57.51	2.3131	7 53 0.4	10.196	8	3 41 39.32	2.4607	14 51 19.9	6.777
9	1 49 16.39	2.3163	8 3 10.9	10.154	9	3 44 7.04	2.4632	14 58 3.6	6.679
10	1 51 35.47	2.3196	8 13 18.8	10.110	10	3 46 34.90	2.4658	15 4 41.3	6.579
11	1 53 54.74	2.3228	8 23 24.1	10.065	11	3 49 2.91	2.4681	15 11 13.0	6.478
12	1 56 14.20	2.3260	8 33 26.6	10.018	12	3 51 31.07	2.4705	15 17 38.7	6.377
13	1 58 33.86	2.3292	8 43 26.3	9.971	13	3 53 59.37	2.4728	15 23 58.3	6.275
14	2 0 53.71	2.3324	8 53 23.1	9.923	14	3 56 27.80	2.4750	15 30 11.7	6.171
15	2 3 13.75	2.3357	9 3 17.0	9.873	15	3 58 56.37	2.4772	15 36 18.9	6.067
16	2 5 33.99	2.3390	9 13 7.8	9.822	16	4 1 25.07	2.4794	15 42 19.8	5.962
17	2 7 54.43	2.3422	9 22 55.6	9.769	17	4 3 53.90	2.4816	15 48 14.4	5.857
18	2 10 15.05	2.3454	9 32 40.2	9.715	18	4 6 22.86	2.4837	15 54 2.6	5.750
19	2 12 35.87	2.3487	9 42 21.5	9.660	19	4 8 51.95	2.4857	15 59 44.4	5.643
20	2 14 56.89	2.3520	9 51 59.5	9.604	20	4 11 21.15	2.4877	16 5 19.7	5.535
21	2 17 18.11	2.3553	10 1 34.0	9.548	21	4 13 50.47	2.4897	16 10 48.5	5.426
22	2 19 39.53	2.3587	10 11 5.0	9.487	22	4 16 19.91	2.4916	16 16 10.8	5.316
23	2 22 1.15	2.3619	N. 10° 20' 32.4"	9.427	23	4 18 49.46	2.4934	N. 16° 21' 26.4"	5.206
SATURDAY 6.					MONDAY 8.				
0	2 24 22.96	2.3652	N. 10° 29' 56.2"	9.368	0	4 21 19.11	2.4951	N. 16° 26' 35.4"	5.095
1	2 26 44.97	2.3684	10 39 16.3	9.303	1	4 23 48.87	2.4968	16 31 37.7	4.983
2	2 29 7.17	2.3716	10 48 32.6	9.239	2	4 26 18.72	2.4984	16 36 33.3	4.870
3	2 31 29.56	2.3748	10 57 45.0	9.174	3	4 28 48.68	2.5000	16 41 22.1	4.757
4	2 33 52.15	2.3781	11 6 53.5	9.108	4	4 31 18.72	2.5015	16 46 4.2	4.644
5	2 36 14.93	2.3812	11 15 58.0	9.040	5	4 33 48.86	2.5029	16 50 39.4	4.529
6	2 38 37.89	2.3843	11 24 58.4	8.971	6	4 36 19.08	2.5043	16 55 7.7	4.415
7	2 41 1.04	2.3875	11 33 54.6	8.901	7	4 38 49.38	2.5056	16 59 29.1	4.299
8	2 43 24.39	2.3906	11 42 46.5	8.830	8	4 41 19.76	2.5069	17 3 43.6	4.183
9	2 45 47.94	2.3940	11 51 34.1	8.758	9	4 43 50.21	2.5082	17 7 51.1	4.067
10	2 48 11.67	2.3972	12 0 17.4	8.684	10	4 46 20.74	2.5095	17 11 51.6	3.950
11	2 50 35.60	2.4003	12 8 56.2	8.609	11	4 48 51.33	2.5108	17 15 45.1	3.832
12	2 52 59.71	2.4034	12 17 30.4	8.533	12	4 51 21.98	2.5113	17 19 31.5	3.714
13	2 55 24.01	2.4065	12 26 0.1	8.456	13	4 53 52.60	2.5122	17 23 10.8	3.596
14	2 57 48.49	2.4096	12 34 25.1	8.377	14	4 56 23.45	2.5131	17 26 42.9	3.478
15	3 0 13.16	2.4127	12 42 45.4	8.298	15	4 58 54.26	2.5139	17 30 7.9	3.357
16	3 2 38.01	2.4157	12 51 0.8	8.217	16	5 1 25.12	2.5147	17 33 25.7	3.237
17	3 5 3.05	2.4187	12 59 11.4	8.136	17	5 3 56.02	2.5154	17 36 36.3	3.117
18	3 7 28.26	2.4217	13 7 17.0	8.052	18	5 6 26.96	2.5160	17 39 39.7	2.996
19	3 9 53.66	2.4247	13 15 17.7	7.968	19	5 8 57.94	2.5165	17 42 35.9	2.876
20	3 12 19.23	2.4277	13 23 13.3	7.883	20	5 11 28.94	2.5169	17 45 24.8	2.755
21	3 14 44.98	2.4306	13 31 3.7	7.797	21	5 13 59.96	2.5172	17 48 6.5	2.633
22	3 17 10.90	2.4335	13 38 48.9	7.709	22	5 16 31.01	2.5176	17 50 40.8	2.512
23	3 19 37.00	2.4364	13 46 28.8	7.620	23	5 19 2.07	2.5178	17 53 7.9	2.390
24	3 22 3.27	2.4392	N. 13° 54' 3.3"	7.531	24	5 21 33.14	2.5179	N. 17° 55' 27.6"	2.267

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
0	^h 5 ^m 21 ^s 33.14	2.5179	N.17° 55' 27.6"	2.267	0	^h 7 ^m 21 ^s 14.54	2.4440	N.17° 24' 13.3"	2.464
1	5 24 4.22	2.5180	17 57 39.9	2.145	1	7 23 41.09	2.4409	17 20 42.2	2.573
2	5 26 35.30	2.5180	17 59 44.9	2.022	2	7 26 7.45	2.4378	17 17 4.5	2.692
3	5 29 6.38	2.5179	18 1 42.6	1.900	3	7 28 33.63	2.4348	17 13 20.3	2.780
4	5 31 37.46	2.5178	18 3 32.9	1.777	4	7 30 59.63	2.4317	17 9 29.7	2.897
5	5 34 8.52	2.5176	18 5 15.8	1.654	5	7 33 25.44	2.4286	17 5 32.7	4.003
6	5 36 39.57	2.5173	18 6 51.3	1.531	6	7 35 51.06	2.4253	17 1 29.3	4.109
7	5 39 10.60	2.5169	18 8 19.5	1.408	7	7 38 16.48	2.4221	16 57 19.6	4.214
8	5 41 41.60	2.5165	18 9 40.3	1.285	8	7 40 41.71	2.4189	16 53 3.7	4.318
9	5 44 12.58	2.5161	18 10 53.7	1.162	9	7 43 6.74	2.4156	16 48 41.5	4.421
10	5 46 43.53	2.5155	18 11 59.7	1.038	10	7 45 31.57	2.4122	16 44 13.1	4.524
11	5 49 14.44	2.5148	18 12 58.4	0.915	11	7 47 56.20	2.4088	16 39 38.6	4.626
12	5 51 45.31	2.5141	18 13 49.6	0.792	12	7 50 20.62	2.4053	16 34 58.0	4.727
13	5 54 16.13	2.5133	18 14 33.4	0.668	13	7 52 44.84	2.4019	16 30 11.3	4.828
14	5 56 46.91	2.5125	18 15 9.8	0.545	14	7 55 8.85	2.3984	16 25 18.7	4.927
15	5 59 17.63	2.5116	18 15 38.8	0.422	15	7 57 32.65	2.3949	16 20 20.1	5.026
16	6 1 48.29	2.5105	18 16 0.5	0.299	16	7 59 56.24	2.3915	16 15 15.6	5.124
17	6 4 18.89	2.5095	18 16 14.8	0.177	17	8 2 19.63	2.3880	16 10 5.3	5.221
18	6 6 49.43	2.5083	18 16 21.7	0.054	18	8 4 42.80	2.3842	16 4 49.1	5.317
19	6 9 19.89	2.5071	18 16 21.3	0.031	19	8 7 5.74	2.3806	15 59 27.2	5.412
20	6 11 50.28	2.5058	18 16 13.5	0.190	20	8 9 28.47	2.3771	15 53 59.6	5.507
21	6 14 20.59	2.5044	18 15 58.4	0.312	21	8 11 50.99	2.3735	15 48 26.4	5.600
22	6 16 50.81	2.5029	18 15 36.0	0.434	22	8 14 13.29	2.3698	15 42 47.6	5.693
23	6 19 20.94	2.5014	N.18 15 6.3	0.556	23	8 16 35.36	2.3661	N.15 37 3.2	5.786
WEDNESDAY 10.					FRIDAY 12.				
0	6 21 50.98	2.4998	N.18 14 29.3	0.677	0	8 18 57.22	2.3624	N.15 31 13.4	5.876
1	6 24 20.92	2.4982	18 13 45.0	0.796	1	8 21 18.85	2.3587	15 25 18.1	5.966
2	6 26 50.77	2.4966	18 12 53.5	0.919	2	8 23 40.26	2.3550	15 19 17.6	6.056
3	6 29 20.51	2.4948	18 11 54.7	1.040	3	8 26 1.45	2.3512	15 13 11.6	6.146
4	6 31 50.15	2.4929	18 10 48.7	1.160	4	8 28 22.41	2.3475	15 7 0.3	6.231
5	6 34 19.67	2.4910	18 9 35.5	1.279	5	8 30 43.15	2.3438	15 0 43.8	6.318
6	6 36 49.07	2.4891	18 8 15.1	1.399	6	8 33 3.67	2.3400	14 54 22.2	6.403
7	6 39 18.36	2.4872	18 6 47.6	1.518	7	8 35 23.95	2.3362	14 47 55.4	6.486
8	6 41 47.53	2.4851	18 5 13.0	1.636	8	8 37 44.01	2.3324	14 41 23.6	6.572
9	6 44 16.57	2.4828	18 3 31.3	1.754	9	8 40 3.84	2.3286	14 34 46.8	6.655
10	6 46 45.47	2.4806	18 1 42.5	1.872	10	8 42 23.44	2.3247	14 28 5.0	6.737
11	6 49 14.24	2.4784	17 59 46.7	1.990	11	8 44 42.81	2.3210	14 21 18.4	6.818
12	6 51 42.88	2.4761	17 57 43.8	2.106	12	8 47 1.96	2.3172	14 14 26.9	6.896
13	6 54 11.37	2.4737	17 55 33.9	2.222	13	8 49 20.87	2.3133	14 7 30.7	6.977
14	6 56 39.72	2.4713	17 53 17.1	2.338	14	8 51 39.56	2.3096	14 0 29.7	7.056
15	6 59 7.92	2.4687	17 50 53.3	2.453	15	8 53 58.02	2.3057	13 53 24.1	7.132
16	7 1 35.97	2.4662	17 48 22.6	2.568	16	8 56 16.25	2.3020	13 46 13.9	7.206
17	7 4 3.87	2.4636	17 45 45.1	2.682	17	8 58 34.26	2.2982	13 38 59.1	7.284
18	7 6 31.61	2.4609	17 43 0.8	2.796	18	9 0 52.03	2.2943	13 31 39.8	7.366
19	7 8 59.18	2.4582	17 40 9.6	2.909	19	9 3 9.57	2.2905	13 24 16.1	7.431
20	7 11 26.59	2.4555	17 37 11.7	3.021	20	9 5 26.89	2.2867	13 16 48.1	7.504
21	7 13 53.84	2.4527	17 34 7.1	3.133	21	9 7 43.98	2.2829	13 9 15.7	7.578
22	7 16 20.91	2.4497	17 30 55.8	3.244	22	9 10 0.84	2.2791	13 1 39.1	7.645
23	7 18 47.81	2.4469	17 27 37.9	3.355	23	9 12 17.47	2.2753	12 53 58.3	7.715
24	7 21 14.54	2.4440	N.17 24 13.3	3.464	24	9 14 33.88	2.2716	N.12 46 13.4	7.788

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
0	9 14 33.88	2.2716	N. 12 46 13.4	7.783	0	10 59 36.62	2.1153	N. 5 32 14.4	9.980
1	9 16 50.06	2.2678	12 38 24.4	7.861	1	11 1 43.46	2.1128	5 22 17.9	9.961
2	9 19 6.02	2.2641	12 30 31.3	7.917	2	11 3 50.16	2.1104	5 12 20.2	9.972
3	9 21 21.75	2.2603	12 22 34.3	7.963	3	11 5 56.71	2.1079	5 2 21.3	9.991
4	9 23 37.26	2.2566	12 14 33.4	8.048	4	11 8 3.11	2.1054	4 52 21.2	10.010
5	9 25 52.54	2.2529	12 6 28.6	8.111	5	11 10 9.36	2.1030	4 42 20.0	10.028
6	9 28 7.61	2.2492	11 58 20.0	8.174	6	11 12 15.47	2.1007	4 32 17.8	10.045
7	9 30 22.45	2.2455	11 50 7.7	8.236	7	11 14 21.45	2.0984	4 22 14.6	10.061
8	9 32 37.07	2.2418	11 41 51.8	8.296	8	11 16 27.28	2.0961	4 12 10.5	10.076
9	9 34 51.47	2.2382	11 33 32.2	8.366	9	11 18 32.98	2.0938	4 2 5.5	10.090
10	9 37 5.65	2.2345	11 25 9.1	8.414	10	11 20 38.54	2.0916	3 51 59.6	10.104
11	9 39 19.61	2.2309	11 16 42.5	8.472	11	11 22 43.97	2.0894	3 41 53.0	10.116
12	9 41 33.36	2.2273	11 8 12.5	8.529	12	11 24 49.27	2.0873	3 31 45.7	10.127
13	9 43 46.89	2.2237	10 59 39.1	8.584	13	11 26 54.44	2.0852	3 21 37.7	10.138
14	9 46 0.21	2.2202	10 51 2.4	8.639	14	11 28 59.49	2.0832	3 11 29.1	10.148
15	9 48 13.31	2.2167	10 42 22.4	8.693	15	11 31 4.42	2.0811	3 1 19.9	10.157
16	9 50 26.21	2.2132	10 33 39.2	8.746	16	11 33 9.22	2.0790	2 51 10.2	10.165
17	9 52 38.89	2.2097	10 24 52.9	8.798	17	11 35 13.90	2.0771	2 41 0.1	10.172
18	9 54 51.37	2.2062	10 16 3.5	8.849	18	11 37 18.47	2.0752	2 30 49.6	10.179
19	9 57 3.63	2.2027	10 7 11.0	8.899	19	11 39 22.93	2.0733	2 20 38.7	10.184
20	9 59 15.69	2.1993	9 58 15.6	8.948	20	11 41 27.27	2.0714	2 10 27.5	10.189
21	10 1 27.55	2.1959	9 49 17.3	8.995	21	11 43 31.50	2.0696	2 0 16.0	10.192
22	10 3 39.20	2.1926	9 40 16.1	9.042	22	11 45 35.62	2.0678	1 50 4.4	10.195
23	10 5 50.66	2.1892	N. 9 31 12.2	9.086	23	11 47 39.64	2.0662	N. 1 39 52.6	10.197
SUNDAY 14.					TUESDAY 16.				
0	10 8 1.91	2.1858	N. 9 22 5.5	9.133	0	11 49 43.56	2.0644	N. 1 29 40.7	10.199
1	10 10 12.96	2.1826	9 12 56.1	9.178	1	11 51 47.37	2.0627	1 19 28.7	10.199
2	10 12 23.82	2.1794	9 3 44.1	9.221	2	11 53 51.09	2.0611	1 9 16.8	10.199
3	10 14 34.49	2.1762	8 54 29.6	9.263	3	11 55 54.71	2.0596	0 59 4.9	10.197
4	10 16 44.96	2.1729	8 45 12.6	9.304	4	11 57 58.23	2.0580	0 48 53.1	10.196
5	10 18 55.24	2.1697	8 35 53.1	9.345	5	12 0 1.67	2.0565	0 38 41.5	10.192
6	10 21 5.32	2.1666	8 26 31.2	9.384	6	12 2 5.01	2.0549	0 28 30.1	10.188
7	10 23 15.22	2.1634	8 17 7.0	9.422	7	12 4 8.26	2.0535	0 18 18.9	10.184
8	10 25 24.93	2.1603	8 7 40.6	9.459	8	12 6 11.43	2.0521	N. 0 8 8.0	10.178
9	10 27 34.46	2.1573	7 58 11.9	9.496	9	12 8 14.51	2.0507	S. 0 2 2.5	10.172
10	10 29 43.81	2.1543	7 48 41.1	9.531	10	12 10 17.52	2.0494	0 12 12.6	10.166
11	10 31 52.98	2.1513	7 39 8.2	9.566	11	12 12 20.44	2.0481	0 22 22.3	10.157
12	10 34 1.97	2.1483	7 29 33.2	9.599	12	12 14 23.20	2.0468	0 32 31.4	10.148
13	10 36 10.78	2.1454	7 19 56.2	9.632	13	12 16 26.06	2.0456	0 42 40.0	10.138
14	10 38 19.42	2.1426	7 10 17.3	9.664	14	12 18 28.76	2.0443	0 52 48.0	10.128
15	10 40 27.89	2.1397	7 0 36.5	9.695	15	12 20 31.38	2.0432	1 2 55.4	10.117
16	10 42 36.18	2.1368	6 50 53.9	9.725	16	12 22 33.94	2.0421	1 13 2.1	10.106
17	10 44 44.30	2.1340	6 41 9.6	9.754	17	12 24 36.43	2.0410	1 23 8.0	10.092
18	10 46 52.26	2.1313	6 31 23.5	9.782	18	12 26 38.86	2.0399	1 33 13.2	10.079
19	10 49 0.06	2.1286	6 21 35.8	9.809	19	12 28 41.22	2.0388	1 43 17.5	10.065
20	10 51 7.69	2.1258	6 11 46.5	9.835	20	12 30 43.52	2.0378	1 53 20.9	10.050
21	10 53 15.16	2.1232	6 1 55.6	9.860	21	12 32 45.76	2.0369	2 3 23.4	10.034
22	10 55 22.47	2.1205	5 52 3.3	9.884	22	12 34 47.95	2.0360	2 13 24.9	10.017
23	10 57 29.62	2.1179	5 42 9.5	9.907	23	12 36 50.08	2.0350	2 23 25.4	9.999
24	10 59 36.62	2.1153	N. 5 32 14.4	9.930	24	12 38 52.15	2.0341	S. 2 33 24.9	9.981

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
0	12 38 52.15	2.0341	S. 2° 33' 24.9	9.981	0	14 16 3.39	2.0226	S. 9° 57' 46.7	8.274
1	12 40 54.17	2.0333	2 43 23.2	9.982	1	14 18 4.90	2.0228	10 6 1.6	8.222
2	12 42 56.15	2.0326	2 53 20.4	9.942	2	14 20 6.43	2.0227	10 14 13.4	8.170
3	12 44 58.08	2.0318	3 3 16.3	9.922	3	14 22 7.98	2.0261	10 22 22.1	8.121
4	12 46 59.96	2.0309	3 13 11.0	9.901	4	14 24 9.56	2.0266	10 30 27.6	8.068
5	12 49 1.79	2.0302	3 23 4.4	9.879	5	14 26 11.16	2.0260	10 38 29.9	8.011
6	12 51 3.59	2.0296	3 32 56.4	9.856	6	14 28 12.79	2.0273	10 46 28.9	7.967
7	12 53 5.35	2.0289	3 42 47.1	9.832	7	14 30 14.44	2.0277	10 54 24.7	7.923
8	12 55 7.06	2.0283	3 52 36.3	9.808	8	14 32 16.12	2.0281	11 2 17.2	7.847
9	12 57 8.74	2.0277	4 2 24.1	9.783	9	14 34 17.83	2.0287	11 10 6.4	7.792
10	12 59 10.39	2.0272	4 12 10.3	9.758	10	14 36 19.56	2.0291	11 17 52.2	7.725
11	13 1 12.01	2.0267	4 21 55.0	9.731	11	14 38 21.32	2.0297	11 25 34.6	7.676
12	13 3 13.59	2.0261	4 31 38.1	9.704	12	14 40 23.12	2.0303	11 33 13.6	7.621
13	13 5 15.14	2.0257	4 41 19.5	9.676	13	14 42 24.95	2.0307	11 40 49.1	7.563
14	13 7 16.67	2.0253	4 50 59.2	9.647	14	14 44 26.80	2.0312	11 48 21.1	7.504
15	13 9 18.17	2.0248	5 0 37.2	9.618	15	14 46 28.69	2.0317	11 55 49.6	7.445
16	13 11 19.65	2.0244	5 10 13.4	9.588	16	14 48 30.61	2.0323	12 3 14.5	7.386
17	13 13 21.10	2.0240	5 19 47.7	9.567	17	14 50 32.56	2.0328	12 10 35.9	7.326
18	13 15 22.53	2.0237	5 29 20.2	9.536	18	14 52 34.55	2.0334	12 17 53.6	7.266
19	13 17 23.94	2.0234	5 38 50.8	9.494	19	14 54 36.57	2.0339	12 25 7.7	7.206
20	13 19 25.34	2.0230	5 48 19.4	9.461	20	14 56 38.62	2.0345	12 32 18.2	7.143
21	13 21 26.72	2.0229	5 57 46.1	9.427	21	14 58 40.71	2.0351	12 39 24.9	7.081
22	13 23 28.09	2.0227	6 7 10.7	9.393	22	15 0 42.84	2.0356	12 46 27.9	7.019
23	13 25 29.44	2.0226	S. 6 16 33.3	9.358	23	15 2 45.00	2.0364	S. 12 53 27.2	6.956
THURSDAY 18.					SATURDAY 20.				
0	13 27 30.79	2.0223	S. 6 25 53.7	9.322	0	15 4 47.20	2.0370	S. 13° 0' 22.7	6.892
1	13 29 32.12	2.0219	6 35 12.0	9.286	1	15 6 49.44	2.0376	13 7 14.4	6.829
2	13 31 33.45	2.0211	6 44 28.1	9.249	2	15 8 51.71	2.0382	13 14 2.2	6.764
3	13 33 34.77	2.0200	6 53 41.9	9.212	3	15 10 54.02	2.0388	13 20 46.1	6.700
4	13 35 36.08	2.0199	7 2 53.5	9.173	4	15 12 56.36	2.0394	13 27 26.1	6.634
5	13 37 37.40	2.0198	7 12 2.7	9.135	5	15 14 58.74	2.0400	13 34 2.2	6.569
6	13 39 38.71	2.0197	7 21 9.6	9.095	6	15 17 1.16	2.0407	13 40 34.4	6.503
7	13 41 40.01	2.0197	7 30 14.1	9.055	7	15 19 3.63	2.0414	13 47 2.6	6.436
8	13 43 41.32	2.0198	7 39 16.1	9.014	8	15 21 6.13	2.0420	13 53 26.8	6.370
9	13 45 42.63	2.0199	7 48 15.7	8.972	9	15 23 8.67	2.0426	13 59 47.0	6.302
10	13 47 43.95	2.0190	7 57 12.8	8.930	10	15 25 11.24	2.0433	14 6 3.1	6.235
11	13 49 45.27	2.0220	8 6 7.3	8.887	11	15 27 13.86	2.0440	14 12 15.1	6.168
12	13 51 46.59	2.0221	8 14 59.2	8.843	12	15 29 16.52	2.0447	14 18 23.0	6.099
13	13 53 47.92	2.0222	8 23 48.5	8.800	13	15 31 19.22	2.0453	14 24 26.8	6.029
14	13 55 49.26	2.0234	8 32 35.1	8.754	14	15 33 21.95	2.0459	14 30 26.4	5.959
15	13 57 50.61	2.0236	8 41 19.0	8.709	15	15 35 24.73	2.0466	14 36 21.9	5.889
16	13 59 51.97	2.0238	8 50 0.2	8.663	16	15 37 27.54	2.0472	14 42 13.2	5.819
17	14 1 53.34	2.0230	8 58 38.6	8.616	17	15 39 30.40	2.0479	14 48 0.2	5.749
18	14 3 54.73	2.0223	9 7 14.2	8.569	18	15 41 33.29	2.0485	14 53 43.0	5.678
19	14 5 56.13	2.0225	9 15 46.9	8.523	19	15 43 36.22	2.0492	14 59 21.5	5.607
20	14 7 57.55	2.0228	9 24 16.8	8.473	20	15 45 39.20	2.0500	15 4 55.8	5.535
21	14 9 58.98	2.0240	9 32 43.7	8.424	21	15 47 42.22	2.0506	15 10 25.7	5.463
22	14 12 0.43	2.0243	9 41 7.7	8.375	22	15 49 45.27	2.0512	15 15 51.3	5.390
23	14 14 1.90	2.0247	9 49 28.7	8.324	23	15 51 48.36	2.0518	15 21 12.6	5.316
24	14 16 3.39	2.0250	S. 9 57 46.7	8.274	24	15 53 51.49	2.0525	S. 15 26 29.5	5.245

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 21.					TUESDAY 23.				
0	15 53 51.49	2.0025	S. 15 26 20.5	5.345	0	17 32 59.84	2.0746	S. 18 8 42.0	1.434
1	15 55 54.66	2.0032	15 31 42.0	5.171	1	17 35 4.32	2.0748	18 10 5.5	1.350
2	15 57 57.87	2.0038	15 36 50.1	5.097	2	17 37 8.81	2.0749	18 11 24.0	1.267
3	16 0 1.11	2.0044	15 41 53.7	5.023	3	17 39 13.31	2.0751	18 12 37.5	1.183
4	16 2 4.40	2.0051	15 46 52.9	4.949	4	17 41 17.82	2.0752	18 13 46.0	1.099
5	16 4 7.72	2.0057	15 51 47.6	4.874	5	17 43 22.34	2.0754	18 14 49.4	1.015
6	16 6 11.08	2.0063	15 56 37.8	4.799	6	17 45 26.87	2.0756	18 15 47.8	0.932
7	16 8 14.48	2.0069	16 1 23.5	4.724	7	17 47 31.41	2.0757	18 16 41.2	0.848
8	16 10 17.91	2.0075	16 6 4.6	4.648	8	17 49 35.95	2.0757	18 17 29.6	0.764
9	16 12 21.38	2.0082	16 10 41.2	4.573	9	17 51 40.49	2.0757	18 18 12.9	0.680
10	16 14 24.89	2.0089	16 15 13.2	4.496	10	17 53 45.04	2.0758	18 18 51.2	0.596
11	16 16 28.43	2.0093	16 19 40.7	4.419	11	17 55 49.59	2.0758	18 19 24.5	0.512
12	16 18 32.01	2.0099	16 24 3.5	4.343	12	17 57 54.14	2.0759	18 19 52.7	0.428
13	16 20 35.62	2.0105	16 28 21.7	4.265	13	17 59 58.70	2.0760	18 20 15.9	0.344
14	16 22 39.27	2.0111	16 32 35.3	4.187	14	18 2 3.26	2.0760	18 20 34.0	0.260
15	16 24 42.95	2.0117	16 36 44.2	4.109	15	18 4 7.81	2.0760	18 20 47.1	0.176
16	16 26 46.67	2.0123	16 40 48.4	4.031	16	18 6 12.37	2.0760	18 20 55.1	0.092
17	16 28 50.42	2.0128	16 44 47.9	3.953	17	18 8 16.93	2.0760	18 20 58.1	0.007
18	16 30 54.20	2.0133	16 48 42.8	3.875	18	18 10 21.49	2.0760	18 20 56.0	0.077
19	16 32 58.02	2.0138	16 52 32.9	3.796	19	18 12 26.04	2.0760	18 20 48.9	0.161
20	16 35 1.86	2.0143	16 56 18.3	3.717	20	18 14 30.59	2.0760	18 20 36.7	0.246
21	16 37 5.74	2.0149	16 59 59.0	3.639	21	18 16 35.14	2.0760	18 20 19.5	0.329
22	16 39 9.65	2.0154	17 3 34.9	3.560	22	18 18 39.68	2.0761	18 19 57.2	0.413
23	16 41 13.58	2.0159	S. 17 7 6.0	3.479	23	18 20 44.22	2.0761	S. 18 19 29.9	0.497
MONDAY 22.					WEDNESDAY 24.				
0	16 43 17.55	2.0164	S. 17 10 32.4	3.399	0	18 22 48.76	2.0766	S. 18 18 57.5	0.561
1	16 45 21.55	2.0168	17 13 54.0	3.319	1	18 24 53.29	2.0764	18 18 20.1	0.663
2	16 47 25.57	2.0173	17 17 10.7	3.239	2	18 26 57.81	2.0762	18 17 37.7	0.749
3	16 49 29.62	2.0177	17 20 22.6	3.158	3	18 29 2.32	2.0761	18 16 50.2	0.833
4	16 51 33.70	2.0182	17 23 29.7	3.078	4	18 31 6.82	2.0760	18 15 57.7	0.916
5	16 53 37.80	2.0186	17 26 31.9	2.997	5	18 33 11.32	2.0749	18 15 0.2	1.000
6	16 55 41.93	2.0191	17 29 29.3	2.916	6	18 35 15.81	2.0747	18 13 57.7	1.084
7	16 57 46.09	2.0196	17 32 21.8	2.835	7	18 37 20.28	2.0745	18 12 50.1	1.168
8	16 59 50.27	2.0199	17 35 9.5	2.754	8	18 39 24.75	2.0743	18 11 37.5	1.252
9	17 1 54.47	2.0203	17 37 52.3	2.673	9	18 41 29.20	2.0741	18 10 19.9	1.336
10	17 3 58.69	2.0208	17 40 30.1	2.590	10	18 43 33.64	2.0739	18 8 57.3	1.419
11	17 6 2.94	2.0210	17 43 3.1	2.509	11	18 45 38.07	2.0737	18 7 29.6	1.502
12	17 8 7.21	2.0213	17 45 31.2	2.427	12	18 47 42.49	2.0735	18 5 57.0	1.586
13	17 10 11.50	2.0217	17 47 54.4	2.345	13	18 49 46.89	2.0733	18 4 19.4	1.669
14	17 12 15.81	2.0220	17 50 12.6	2.271	14	18 51 51.28	2.0731	18 2 36.7	1.752
15	17 14 20.14	2.0223	17 52 25.9	2.190	15	18 53 55.66	2.0728	18 0 49.1	1.835
16	17 16 24.49	2.0226	17 54 34.2	2.099	16	18 56 0.02	2.0726	17 58 56.5	1.918
17	17 18 28.85	2.0228	17 56 37.6	2.015	17	18 58 4.37	2.0723	17 56 58.9	2.001
18	17 20 33.23	2.0231	17 58 36.0	1.933	18	19 0 8.70	2.0720	17 54 56.4	2.083
19	17 22 37.63	2.0234	18 0 29.5	1.850	19	19 2 13.01	2.0717	17 52 48.9	2.166
20	17 24 42.04	2.0237	18 2 18.0	1.767	20	19 4 17.31	2.0715	17 50 36.5	2.248
21	17 26 46.47	2.0240	18 4 1.5	1.684	21	19 6 21.59	2.0712	17 48 19.1	2.331
22	17 28 50.92	2.0242	18 5 40.0	1.600	22	19 8 25.85	2.0709	17 45 56.8	2.413
23	17 30 55.37	2.0244	18 7 13.5	1.517	23	19 10 30.09	2.0706	17 43 29.6	2.495
24	17 32 59.84	2.0246	S. 18 8 42.0	1.434	24	19 12 34.32	2.0708	S. 17 40 57.4	2.577

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
THURSDAY 25.					SATURDAY 27.				
0	19 12 34.32	2.0703	S. 17 40 57.4	2.577	0	20 51 35.91	2.0077	S. 14 6 12.5	6.204
1	19 14 38.53	2.0700	17 38 20.3	2.580	1	20 53 39.37	2.0077	13 59 53.3	6.245
2	19 16 42.72	2.0697	17 35 38.3	2.740	2	20 55 42.82	2.0077	13 53 29.9	6.426
3	19 18 46.89	2.0693	17 32 51.4	2.932	3	20 57 46.28	2.0076	13 47 2.3	6.626
4	19 20 51.04	2.0690	17 29 59.6	2.994	4	20 59 49.73	2.0076	13 40 30.4	6.846
5	19 22 55.17	2.0687	17 27 3.0	2.996	5	21 1 53.18	2.0076	13 33 54.4	6.885
6	19 24 59.29	2.0683	17 24 1.5	2.998	6	21 3 56.63	2.0076	13 27 14.2	6.704
7	19 27 3.39	2.0682	17 20 55.1	3.147	7	21 6 0.09	2.0077	13 20 29.9	6.773
8	19 29 7.47	2.0678	17 17 43.9	3.228	8	21 8 3.55	2.0077	13 13 41.4	6.842
9	19 31 11.53	2.0674	17 14 27.8	3.306	9	21 10 7.01	2.0077	13 6 48.8	6.910
10	19 33 15.56	2.0671	17 11 6.9	3.380	10	21 12 10.48	2.0078	12 59 52.2	6.978
11	19 35 19.58	2.0668	17 7 41.2	3.450	11	21 14 13.95	2.0080	12 52 51.5	7.045
12	19 37 23.58	2.0665	17 4 10.6	3.519	12	21 16 17.44	2.0082	12 45 46.8	7.113
13	19 39 27.56	2.0662	17 0 35.2	3.589	13	21 18 20.93	2.0083	12 38 38.0	7.180
14	19 41 31.52	2.0658	16 56 55.1	3.709	14	21 20 24.44	2.0086	12 31 25.2	7.246
15	19 43 35.45	2.0654	16 53 10.2	3.780	15	21 22 27.95	2.0087	12 24 8.4	7.313
16	19 45 39.37	2.0651	16 49 20.5	3.808	16	21 24 31.48	2.0089	12 16 47.7	7.379
17	19 47 43.27	2.0648	16 45 26.0	3.947	17	21 26 35.03	2.0092	12 9 23.0	7.445
18	19 49 47.15	2.0645	16 41 26.8	4.026	18	21 28 38.59	2.0095	12 1 54.4	7.509
19	19 51 51.01	2.0642	16 37 22.9	4.106	19	21 30 42.17	2.0097	11 54 22.0	7.573
20	19 53 54.85	2.0638	16 33 14.2	4.184	20	21 32 45.76	2.0099	11 46 45.7	7.637
21	19 55 58.67	2.0635	16 29 0.8	4.262	21	21 34 49.37	2.0004	11 39 5.6	7.701
22	19 58 2.47	2.0632	16 24 42.7	4.340	22	21 36 53.01	2.0006	11 31 21.6	7.764
23	20 0 6.25	2.0629	S. 16 20 20.0	4.418	23	21 38 56.67	2.0013	S. 11 23 33.9	7.827
FRIDAY 26.					SUNDAY 28.				
0	20 2 10.02	2.0626	S. 16 15 52.6	4.496	0	21 41 0.35	2.0016	S. 11 15 42.4	7.890
1	20 4 13.76	2.0623	16 11 20.5	4.573	1	21 43 4.06	2.0020	11 7 47.2	7.952
2	20 6 17.49	2.0620	16 6 43.8	4.650	2	21 45 7.79	2.0026	10 59 48.2	8.013
3	20 8 21.20	2.0617	16 2 2.5	4.727	3	21 47 11.56	2.0031	10 51 45.6	8.075
4	20 10 24.90	2.0614	15 57 16.5	4.804	4	21 49 15.36	2.0036	10 43 39.3	8.136
5	20 12 28.57	2.0611	15 52 25.9	4.881	5	21 51 19.19	2.0041	10 35 29.3	8.196
6	20 14 32.23	2.0608	15 47 30.8	4.957	6	21 53 23.05	2.0046	10 27 15.8	8.256
7	20 16 35.87	2.0606	15 42 31.1	5.033	7	21 55 26.94	2.0052	10 18 58.7	8.315
8	20 18 39.50	2.0604	15 37 26.8	5.109	8	21 57 30.68	2.0058	10 10 38.0	8.374
9	20 20 43.12	2.0602	15 32 18.0	5.184	9	21 59 34.85	2.0065	10 2 13.8	8.433
10	20 22 46.72	2.0600	15 27 4.7	5.260	10	22 1 38.87	2.0071	9 53 46.1	8.490
11	20 24 50.30	2.0596	15 21 46.9	5.336	11	22 3 42.93	2.0080	9 45 15.0	8.547
12	20 26 53.87	2.0594	15 16 24.5	5.409	12	22 5 47.03	2.0087	9 36 40.4	8.604
13	20 28 57.43	2.0592	15 10 57.7	5.481	13	22 7 51.18	2.0095	9 28 2.4	8.661
14	20 31 0.97	2.0590	15 5 26.4	5.554	14	22 9 55.37	2.0103	9 19 21.1	8.717
15	20 33 4.51	2.0588	14 59 50.7	5.625	15	22 11 59.62	2.0112	9 10 36.4	8.773
16	20 35 8.03	2.0586	14 54 10.6	5.704	16	22 14 3.92	2.0121	9 1 48.4	8.827
17	20 37 11.54	2.0585	14 48 26.1	5.779	17	22 16 8.27	2.0129	8 52 57.1	8.880
18	20 39 15.05	2.0583	14 42 37.2	5.853	18	22 18 12.67	2.0138	8 44 2.6	8.930
19	20 41 18.54	2.0582	14 36 43.9	5.924	19	22 20 17.13	2.0149	8 35 4.8	8.980
20	20 43 22.03	2.0581	14 30 46.3	5.997	20	22 22 21.66	2.0160	8 26 3.9	9.029
21	20 45 25.51	2.0580	14 24 44.3	6.069	21	22 24 26.25	2.0170	8 16 59.8	9.084
22	20 47 28.98	2.0578	14 18 38.0	6.141	22	22 26 30.90	2.0180	8 7 52.6	9.140
23	20 49 32.45	2.0577	14 12 27.4	6.213	23	22 28 35.61	2.0191	7 58 42.3	9.197
24	20 51 35.91	2.0577	S. 14 6 12.5	6.284	24	22 30 40.39	2.0202	S. 7 49 29.0	9.247

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 29.					TUESDAY 30.				
0	22 30 40.39	2.0802	S. 7 49 29.0	9.347	0	23 21 0.87	2.1183	S. 3 54 28.4	10.373
1	22 32 45.24	2.0814	7 40 12.6	9.397	1	23 23 8.03	2.1204	3 44 11.0	10.307
2	22 34 50.16	2.0826	7 30 53.3	9.347	2	23 25 15.32	2.1226	3 33 51.6	10.240
3	22 36 55.15	2.0838	7 21 31.0	9.306	3	23 27 22.74	2.1248	3 23 30.2	10.173
4	22 39 0.22	2.0851	7 12 5.8	9.444	4	23 29 30.29	2.1270	3 13 6.9	10.104
5	22 41 5.37	2.0866	7 2 37.7	9.492	5	23 31 37.97	2.1292	3 2 41.7	10.038
6	22 43 10.60	2.0879	6 53 6.8	9.580	6	23 33 45.79	2.1314	2 52 14.7	10.065
7	22 45 15.91	2.0892	6 43 33.1	9.666	7	23 35 53.74	2.1337	2 41 45.9	10.094
8	22 47 21.31	2.0907	6 33 56.6	9.631	8	23 38 1.83	2.1360	2 31 15.4	10.022
9	22 49 26.80	2.0922	6 24 17.4	9.676	9	23 40 10.06	2.1384	2 20 43.3	10.049
10	22 51 32.37	2.0938	6 14 35.5	9.731	10	23 42 18.44	2.1409	2 10 9.5	10.076
11	22 53 38.03	2.0951	6 4 50.9	9.766	11	23 44 26.97	2.1433	1 59 34.2	10.002
12	22 55 43.78	2.0966	5 55 3.7	9.806	12	23 46 35.64	2.1458	1 48 57.4	10.026
13	22 57 49.62	2.0982	5 45 13.9	9.861	13	23 48 44.46	2.1484	1 38 19.1	10.050
14	22 59 55.56	2.0999	5 35 21.6	9.892	14	23 50 53.44	2.1510	1 27 39.3	10.074
15	23 2 1.61	2.1015	5 25 26.8	9.894	15	23 53 2.58	2.1536	1 16 58.2	10.098
16	23 4 7.75	2.1033	5 15 29.5	9.874	16	23 55 11.87	2.1563	1 6 15.8	10.117
17	23 6 14.00	2.1051	5 5 30.0	10.014	17	23 57 21.33	2.1590	0 55 32.1	10.136
18	23 8 20.36	2.1069	4 55 28.0	10.063	18	23 59 30.95	2.1617	0 44 47.3	10.157
19	23 10 26.83	2.1087	4 45 23.6	10.092	19	0 1 40.73	2.1644	0 34 1.3	10.178
20	23 12 33.40	2.1106	4 35 17.0	10.129	20	0 3 50.68	2.1672	0 23 14.3	10.199
21	23 14 40.09	2.1125	4 25 8.1	10.166	21	0 6 0.80	2.1702	0 12 26.2	10.209
22	23 16 46.90	2.1145	4 14 57.0	10.203	22	0 8 11.10	2.1731	S. 0 1 37.2	10.224
23	23 18 53.83	2.1164	4 4 43.7	10.236	23	0 10 21.57	2.1760	N. 0 9 12.7	10.239
24	23 21 0.87	2.1183	S. 3 54 28.4	10.273	24	0 12 32.22	2.1789	N. 0 20 3.4	10.252

PHASES OF THE MOON.

● New Moon,	4 10 4.0
☾ First Quarter,	11 3 9.1
○ Full Moon,	18 11 6.0
☾ Last Quarter,	26 14 0.9

☾ Perigee,	7 13.3
☾ Apogee,	23 10.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	Saturn W.	94° 59' 45"	2674	96° 37' 0"	2686	98° 14' 36"	2643	99° 52' 33"	2627
	Antares W.	80 50 27	2749	82 26 2	2738	84 1 58	2716	85 38 16	2701
	SUN E.	42 48 30	2684	41 19 0	2618	39 49 9	2601	38 18 57	2585
2	Antares W.	93 45 3	2622	95 23 28	2607	97 2 13	2592	98 41 19	2577
	SUN E.	30 42 48	2602	29 10 33	2587	27 37 57	2572	26 5 1	2556
6	SUN W.	21 18 55	2524	22 59 35	2517	24 40 24	2512	26 21 21	2507
	Mars E.	74 38 4	2355	72 53 25	2352	71 8 41	2348	69 23 52	2346
	Regulus E.	110 44 3	2207	108 55 46	2208	107 7 23	2199	105 18 55	2196
7	SUN W.	34 47 31	2492	36 28 55	2491	38 10 21	2490	39 51 48	2490
	Mars E.	60 39 13	2343	58 54 16	2344	57 9 20	2346	55 24 28	2346
	Regulus E.	96 15 29	2186	94 26 40	2186	92 37 51	2186	90 49 2	2186
8	SUN W.	48 18 47	2497	50 0 4	2500	51 41 17	2503	53 22 25	2507
	Mars E.	46 41 16	2371	44 57 0	2378	43 12 53	2385	41 28 57	2394
	Regulus E.	81 45 15	2194	79 56 39	2196	78 8 6	2200	76 19 38	2204
9	SUN W.	61 46 44	2530	63 27 16	2535	65 7 40	2541	66 47 55	2547
	Mars E.	32 52 56	2455	31 10 40	2473	29 28 48	2492	27 47 24	2516
	Regulus E.	67 18 48	2226	65 30 59	2231	63 43 17	2237	61 55 44	2243
	Spica E.	120 47 29	2239	118 59 59	2244	117 12 36	2248	115 25 19	2253
10	SUN W.	75 7 5	2580	76 46 26	2588	78 25 38	2596	80 4 39	2603
	Aldebaran W.	27 9 44	2368	28 56 30	2376	30 43 6	2382	32 29 32	2389
	Regulus E.	53 0 18	2275	51 13 42	2283	49 27 17	2290	47 41 3	2296
	Spica E.	106 31 0	2263	104 44 35	2269	102 58 20	2296	101 12 14	2303
11	SUN W.	88 17 6	2643	89 55 2	2662	91 32 47	2680	93 10 21	2688
	Aldebaran W.	41 19 3	2326	43 4 24	2334	44 49 34	2343	46 34 33	2349
	Regulus E.	38 52 44	2238	37 7 41	2247	35 22 50	2256	33 38 12	2266
	Spica E.	92 24 23	2239	90 39 21	2247	88 54 31	2255	87 9 51	2263
12	SUN W.	101 15 18	2712	102 51 43	2730	104 27 56	2729	106 3 57	2738
	Aldebaran W.	55 16 37	2369	57 0 27	2397	58 44 6	2405	60 27 33	2413
	Spica E.	78 29 27	2408	76 45 57	2412	75 2 39	2420	73 19 33	2429
	Saturn E.	109 34 59	2374	107 50 47	2382	106 6 46	2390	104 22 56	2398
13	SUN W.	114 1 4	2768	115 35 54	2792	117 10 33	2801	118 44 59	2810
	Aldebaran W.	69 1 55	2455	70 44 12	2462	72 26 18	2471	74 8 12	2479
	Pollux W.	27 30 19	2668	29 3 31	2628	30 37 24	2601	32 11 51	2579
	Mars W.	23 17 28	2779	24 52 23	2769	26 27 32	2760	28 2 53	2753
	Spica E.	64 47 3	2473	63 5 9	2480	61 23 28	2489	59 41 59	2497
	Saturn E.	95 46 42	2438	94 4 2	2446	92 21 33	2455	90 39 16	2463
14	SUN W.	126 34 13	2856	128 7 28	2886	129 40 31	2916	131 13 22	2946
	Aldebaran W.	82 34 50	2620	84 15 35	2629	85 56 8	2637	87 36 30	2646
	Pollux W.	40 9 34	2723	41 45 44	2718	43 22 0	2715	44 58 20	2713
	Mars W.	36 1 10	2744	37 36 50	2747	39 12 27	2760	40 48 0	2754
	Spica E.	51 17 42	2643	49 37 28	2653	47 57 28	2662	46 17 41	2672
	Saturn E.	82 10 41	2604	80 29 33	2612	78 48 36	2620	77 7 51	2628
	Antares E.	97 3 36	2563	95 24 17	2560	93 45 8	2568	92 6 10	2567
15	Aldebaran W.	95 55 28	2587	97 34 41	2595	99 13 43	2604	100 52 33	2612

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
1	Saturn	W.	101° 30' 51"	2611	103° 9' 31"	2606	104° 48' 32"	2600	106° 27' 54"	2604
	Antares	W.	87 14 55	2608	88 51 55	2600	90 29 17	2604	92 6 59	2608
	SUN	E.	36 48 25	2609	35 17 32	2601	33 46 18	2604	32 14 43	2619
2	Antares	W.	100 20 45	2608	102 0 31	2646	103 40 37	2636	105 21 2	2620
	SUN	E.	24 31 46	2643	22 58 13	2628	21 24 21	2614	19 50 10	2600
6	SUN	W.	28 2 25	2600	29 43 35	2480	31 24 50	2466	33 6 9	2494
	Mars	E.	67 39 0	2644	65 54 5	2643	64 9 8	2642	62 24 11	2643
	Regulus	E.	103 30 21	2196	101 41 43	2190	99 53 1	2186	98 4 16	2187
7	SUN	W.	41 33 15	2491	43 14 41	2492	44 56 5	2488	46 37 27	2496
	Mars	E.	53 39 38	2661	51 54 53	2665	50 10 14	2669	48 25 41	2665
	Regulus	E.	89 0 13	2196	87 11 25	2190	85 22 39	2190	83 33 56	2193
8	SUN	W.	55 3 29	2611	56 44 27	2616	58 25 19	2620	60 6 5	2626
	Mars	E.	39 45 14	2404	38 1 45	2416	36 18 31	2426	34 35 34	2440
	Regulus	E.	74 31 16	2307	72 42 59	2313	70 54 49	2316	69 6 45	2320
9	SUN	W.	68 28 3	2608	70 8 2	2600	71 47 52	2606	73 27 33	2673
	Mars	E.	26 6 33	2644	24 26 21	2603	22 47 1	2606	21 8 40	2676
	Regulus	E.	60 8 20	2349	58 21 5	2366	56 34 0	2362	54 47 4	2368
	Spica	E.	113 38 11	2326	111 51 10	2364	110 4 18	2370	108 17 34	2376
10	SUN	W.	81 43 30	2613	83 22 10	2620	85 0 40	2626	86 38 58	2636
	Aldebaran	W.	34 15 47	2306	36 1 52	2304	37 47 46	2311	39 33 30	2318
	Regulus	E.	45 55 0	2306	44 9 9	2318	42 23 29	2322	40 38 0	2330
	Spica	E.	99 26 19	2310	97 40 34	2317	95 55 0	2324	94 9 36	2333
11	SUN	W.	94 47 44	2676	96 24 56	2686	98 1 55	2696	99 38 42	2704
	Aldebaran	W.	48 19 21	2307	50 3 57	2303	51 48 22	2375	53 32 35	2381
	Regulus	E.	31 53 47	2376	30 9 37	2366	28 25 41	2366	26 42 0	2406
	Spica	E.	85 25 23	2371	83 41 7	2379	81 57 2	2387	80 13 8	2396
12	SUN	W.	107 39 46	2747	109 15 23	2786	110 50 49	2796	112 26 2	2774
	Aldebaran	W.	62 10 49	2439	63 53 53	2439	65 36 45	2486	67 19 26	2446
	Spica	E.	71 36 39	2437	69 53 57	2446	68 11 27	2484	66 29 9	2462
	Saturn	E.	102 39 19	2406	100 55 52	2414	99 12 37	2423	97 29 34	2430
13	SUN	W.	120 19 14	2819	121 53 17	2826	123 27 7	2838	125 0 46	2847
	Aldebaran	W.	75 49 55	2487	77 31 26	2496	79 12 45	2504	80 53 53	2619
	Pollux	W.	33 46 46	2763	35 22 4	2749	36 57 40	2787	38 33 31	2799
	Mars	W.	29 38 25	2747	31 14 3	2744	32 49 44	2743	34 25 27	2743
	Spica	E.	58 0 43	2607	56 19 38	2616	54 38 47	2626	52 58 8	2634
	Saturn	E.	88 57 10	2471	87 15 16	2479	85 33 33	2487	83 52 1	2496
14	SUN	W.	132 46 1	2904	134 18 27	2904	135 50 42	2913	137 22 43	2924
	Aldebaran	W.	89 16 40	2603	90 56 40	2601	92 36 27	2670	94 16 4	2678
	Pollux	W.	46 34 43	2713	48 11 7	2713	49 47 30	2713	51 23 52	2716
	Mars	W.	42 23 27	2769	43 58 49	2764	45 34 4	2769	47 9 12	2776
	Spica	E.	44 38 8	2603	42 58 48	2603	41 19 43	2603	39 40 52	2614
	Saturn	E.	75 27 17	2636	73 46 55	2646	72 6 44	2663	70 26 44	2661
	Antares	E.	90 27 24	2616	88 48 49	2623	87 10 25	2631	85 32 12	2640
15	Aldebaran	W.	102 31 12	2621	104 9 39	2629	105 47 54	2638	107 25 58	2646

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	III ^h .	P. L. of DIST.	VII ^h .	P. L. of DIST.	IX ^h .	P. L. of DIST.
15	Pollux W.	53° 6' 12"	2718	54 36 29	2721	56 12 41	2725	57 46 48	2729
	Mars W.	48 44 13	2704	50 19 6	2708	51 53 50	2704	53 28 26	2701
	Spica E.	38 2 15	2624	38 23 53	2626	34 45 46	2618	33 7 56	2600
	Saturn E.	68 46 56	2609	67 7 19	2678	65 27 54	2687	63 48 41	2696
	Antares E.	83 54 11	2640	82 16 22	2627	80 38 45	2605	79 1 20	2676
16	Aldebaran W.	109 3 51	2655	110 41 31	2653	112 19 0	2672	114 56 18	2661
	Pollux W.	65 47 52	2746	67 23 18	2764	68 58 37	2766	70 33 47	2775
	Mars W.	61 19 4	2626	62 52 42	2646	64 26 11	2654	65 59 28	2662
	Regulus W.	29 3 42	2674	30 40 57	2684	32 18 3	2685	33 54 59	2695
	Saturn E.	55 35 28	2638	53 57 25	2616	52 19 33	2655	50 41 53	2664
17	Antares E.	70 57 23	2724	69 21 14	2724	67 45 19	2744	66 9 40	2744
	Pollux W.	78 27 19	2611	80 1 32	2620	81 35 34	2628	83 9 26	2636
	Mars W.	73 43 17	2604	75 15 30	2613	76 47 32	2623	78 19 23	2631
	Regulus W.	41 57 9	2724	43 33 3	2748	45 8 46	2761	46 44 18	2769
	Saturn E.	42 36 33	2709	41 0 5	2718	39 23 49	2737	37 47 45	2737
18	Antares E.	56 14 44	2610	56 40 29	2622	55 6 30	2633	53 32 47	2645
	α Aquilæ E.	106 33 7	2192	105 6 50	2195	103 40 36	2199	102 14 24	2202
	Pollux W.	90 56 0	2626	92 26 45	2629	94 1 18	2636	95 33 39	2640
	Mars W.	85 55 45	2677	87 26 26	2688	88 56 56	2695	90 27 15	2695
	Regulus W.	54 39 10	2661	56 13 35	2671	57 47 48	2680	59 21 50	2686
19	Antares E.	45 48 31	2619	44 16 36	2635	42 45 1	2661	41 13 47	2669
	α Aquilæ E.	95 4 47	2220	93 39 13	2227	92 13 48	2245	90 48 33	2254
	Pollux W.	103 12 25	2626	104 43 33	2626	106 14 29	2676	107 45 12	2686
	Mars W.	97 55 54	2623	99 25 3	2629	100 54 1	2670	102 23 48	2679
	Regulus W.	67 9 11	2673	68 42 5	2680	70 14 49	2689	71 47 21	2696
20	Antares E.	33 43 43	2672	32 15 7	2106	30 47 4	2136	29 19 38	2149
	α Aquilæ E.	83 44 58	2305	82 20 53	2317	80 57 1	2329	79 83 24	2343
	Jupiter E.	115 42 25	2292	114 10 50	2293	112 39 26	2292	111 8 14	2291
	Fomalhaut E.	116 16 2	2313	114 52 6	2313	113 28 8	2310	112 4 8	2309
	Regulus W.	79 27 24	2626	80 58 53	2647	82 30 12	2655	84 1 22	2662
21	Spica W.	26 11 40	2624	27 41 52	2629	29 19 0	2635	30 42 5	2639
	α Aquilæ E.	72 39 20	2419	71 17 23	2424	69 55 46	2432	68 34 28	2471
	Jupiter E.	103 34 54	2602	102 4 41	2610	100 34 41	2618	99 4 51	2626
	Fomalhaut E.	105 4 13	2316	103 40 20	2319	102 16 30	2323	100 52 45	2326
	Regulus W.	94 34 46	2626	93 5 3	2626	94 35 9	2613	96 5 7	2618
22	Spica W.	38 11 27	2626	39 41 5	2626	41 10 37	2628	42 40 2	2643
	α Aquilæ E.	64 58 24	2672	60 34 23	2620	59 15 48	2625	57 57 41	2632
	Jupiter E.	91 37 58	2626	90 9 1	2629	88 40 13	2675	87 11 33	2682
	Fomalhaut E.	98 55 13	2361	92 32 0	2367	91 8 54	2363	89 45 56	2369
	Venus E.	111 49 7	2439	110 27 35	2445	109 6 11	2454	107 44 55	2461
23	Spica W.	50 5 48	2624	54 34 42	2627	53 3 31	2671	54 22 16	2673
	Saturn W.	19 32 24	2629	21 1 46	2641	22 31 8	2643	24 0 28	2645
	α Aquilæ E.	51 34 54	2614	50 29 5	2626	49 5 57	2624	47 52 21	2629
	Jupiter E.	79 50 1	2109	78 22 2	2114	76 54 9	2118	75 26 20	2123
	Fomalhaut E.	82 53 53	2404	81 30 40	2411	80 8 36	2412	78 46 41	2416
	α Pegasi E.	97 44 12	2324	96 16 54	2326	94 52 40	2320	93 28 29	2324
	Venus E.	101 0 25	2401	99 39 50	2426	98 19 22	2401	96 58 58	2405
	SUN E.	139 58 23	2426	138 36 36	2426	137 14 53	2423	135 53 14	2426

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
15	Pollux W.	59° 24' 50"	2733	61° 0' 46"	2738	62° 36' 35"	2744	64° 12' 17"	2749
	Mars W.	55 2 53	2808	56 37 10	2815	58 11 18	2823	59 45 16	2831
	Spica E.	31 30 23	2674	29 53 7	2688	28 16 11	2703	26 39 35	2719
	Saturn E.	62 9 39	2804	60 30 49	2813	58 52 10	2821	57 13 43	2829
	Antares E.	77 24 7	2868	75 47 7	2868	74 10 20	2764	72 33 45	2713
16	Aldebaran W.	115 33 24	2889	117 10 18	2890	118 47 0	2707	120 23 31	2716
	Pollux W.	72 8 48	2783	73 43 40	2789	75 18 23	2796	76 52 56	2804
	Mars W.	67 32 35	2870	69 5 32	2879	70 38 18	2887	72 10 53	2895
	Regulus W.	35 31 46	2703	37 8 22	2710	38 44 48	2719	40 21 4	2726
	Saturn E.	49 4 25	2873	47 27 9	2889	45 50 5	2891	44 13 13	2700
	Antares E.	64 34 10	2768	62 58 56	2778	61 23 57	2788	59 49 13	2799
17	Pollux W.	84 43 7	2845	86 16 37	2858	87 49 56	2882	89 23 4	2871
	Mars W.	79 51 2	2840	81 22 30	2849	82 53 47	2868	84 24 52	2868
	Regulus W.	48 19 39	2788	49 54 49	2777	51 29 47	2788	53 4 35	2794
	Saturn E.	36 11 54	2746	34 36 15	2765	33 0 49	2786	31 25 36	2775
	Antares E.	51 59 21	2861	50 26 11	2874	48 53 20	2889	47 20 46	2893
	α Aquilæ E.	100 48 17	3206	99 22 15	3211	97 56 19	3216	96 30 29	3223
18	Pollux W.	97 5 48	2917	98 37 46	2927	100 9 31	2986	101 41 4	2946
	Mars W.	91 57 23	3014	93 27 17	3028	94 57 1	3033	96 26 33	3042
	Regulus W.	60 55 41	2838	62 29 20	2846	64 2 48	2865	65 36 5	2863
	Antares E.	39 42 56	2998	38 12 28	3009	36 42 25	3030	35 12 50	3053
	α Aquilæ E.	89 23 27	3268	87 58 33	3273	86 33 49	3282	85 9 17	3294
19	Pollux W.	109 15 42	3097	110 45 59	3097	112 16 3	3018	113 45 54	3028
	Mars W.	103 51 23	3088	105 19 47	3098	106 47 59	3107	108 16 0	3116
	Regulus W.	73 19 43	2906	74 51 54	2915	76 23 54	2923	77 55 44	2931
	Antares E.	27 52 53	3208	26 26 54	3208	25 1 47	3203	23 37 38	3260
	α Aquilæ E.	78 10 2	3357	76 46 56	3373	75 24 7	3386	74 1 34	3401
	Jupiter E.	109 37 12	3069	108 6 21	3078	106 35 41	3086	105 5 11	2994
	Fomalhaut E.	110 40 7	3389	109 16 6	3310	107 52 6	3312	106 28 8	3313
20	Regulus W.	85 32 22	2970	87 3 12	2977	88 33 53	2985	90 4 25	2993
	Spica W.	32 12 6	3013	33 42 3	3016	35 11 56	3020	36 41 44	3024
	α Aquilæ E.	67 13 30	3489	65 52 54	3509	64 32 41	3531	63 12 51	3553
	Jupiter E.	97 35 10	3034	96 5 38	3041	94 36 16	3047	93 7 3	3055
	Fomalhaut E.	99 29 4	3331	98 5 28	3336	96 41 57	3340	95 18 32	3345
21	Regulus W.	97 34 57	3024	99 4 40	3030	100 34 16	3035	102 3 45	3040
	Spica W.	44 9 23	3047	45 38 36	3052	47 7 45	3066	48 36 49	3060
	α Aquilæ E.	56 40 3	3381	55 22 56	3711	54 6 20	3744	52 50 19	3778
	Jupiter E.	85 43 0	3087	84 14 35	3096	82 46 17	3099	81 18 6	3104
	Fomalhaut E.	88 23 4	3376	87 0 19	3393	85 37 43	3399	84 15 14	3396
	Venus E.	106 23 47	3487	105 2 46	3473	103 41 52	3480	102 21 5	3486
22	Spica W.	56 0 58	3078	57 29 36	3080	58 58 10	3082	60 26 41	3084
	Saturn W.	25 29 45	3047	26 59 0	3048	28 28 13	3051	29 57 23	3052
	α Aquilæ E.	46 39 51	3387	45 27 58	3430	44 16 58	3496	43 6 54	4160
	Jupiter E.	73 58 37	3126	72 30 58	3129	71 3 23	3132	69 35 52	3134
	Fomalhaut E.	77 24 54	3434	76 3 16	3445	74 41 48	3461	73 20 29	3460
	α Pegasus E.	92 4 21	3307	90 40 18	3310	89 16 18	3313	87 52 22	3317
	Venus E.	95 38 40	3409	94 18 26	3413	92 58 16	3416	91 38 10	3419
	SUN E.	134 31 40	3441	133 10 10	3445	131 48 43	3447	130 27 20	3450

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
23	Spica W.	61° 55' 10"	3087	63 23 36	3088	64 52 0	3089	66 20 23	3090
	Saturn W.	31 26 31	3033	32 55 38	3065	34 24 43	3056	35 53 47	3056
	Jupiter E.	68 8 25	3137	66 41 1	3139	65 13 38	3141	63 46 18	3141
	Fomalhaut E.	71 59 19	3469	70 38 20	3476	69 17 31	3468	67 56 52	3497
	α Pegasi E.	86 28 30	3320	85 4 41	3328	83 40 56	3326	82 17 15	3329
	Venus E.	90 18 7	3522	88 58 7	3526	87 38 10	3526	86 18 15	3527
	SUN E.	129 6 0	3452	127 44 42	3464	126 53 26	3456	125 2 12	3456
24	Spica W.	73 42 11	3089	75 10 34	3087	76 38 59	3088	78 7 26	3089
	Saturn W.	43 19 4	3064	44 48 10	3069	46 17 17	3061	47 46 28	3048
	Antares W.	29 6 37	3331	30 30 14	3328	31 54 17	3327	33 18 43	3328
	Jupiter E.	56 29 51	3143	55 2 33	3142	53 35 14	3140	52 7 53	3139
	Fomalhaut E.	61 16 38	3468	59 57 14	3468	58 38 4	3469	57 19 10	3496
	α Pegasi E.	75 19 41	3344	73 56 20	3346	72 33 2	3350	71 9 48	3352
	Venus E.	79 38 52	3527	78 18 58	3526	76 59 3	3526	75 39 6	3523
25	SUN E.	118 16 11	3455	116 54 57	3464	115 33 42	3459	114 12 25	3450
	Spica W.	85 30 34	3068	86 59 26	3069	88 28 24	3068	89 57 28	3069
	Saturn W.	55 13 11	3030	56 42 47	3026	58 12 29	3021	59 42 16	3018
	Antares W.	40 25 50	3194	41 52 6	3192	43 18 37	3169	44 45 53	3166
	Jupiter E.	44 50 23	3122	43 22 41	3118	41 54 53	3113	40 26 59	3108
	Fomalhaut E.	50 49 14	3493	49 32 19	3477	48 15 50	3444	46 59 48	3423
	α Pegasi E.	64 14 27	3369	62 51 35	3376	61 28 47	3376	60 6 3	3360
26	Venus E.	68 58 33	3504	67 38 12	3496	66 17 46	3492	64 57 13	3486
	SUN E.	107 25 4	3431	106 3 22	3425	104 41 35	3420	103 19 41	3414
	Spica W.	97 24 46	3014	98 54 41	3005	100 24 46	2997	101 55 1	2989
	Saturn W.	67 13 14	2978	68 43 54	2970	70 14 45	2961	71 45 46	2961
	Antares W.	52 2 52	3007	53 31 5	3006	54 59 34	3073	56 28 17	3060
	Jupiter E.	33 5 44	3076	31 37 5	3069	30 8 17	3061	28 39 20	3054
	α Pegasi E.	53 13 51	3412	51 51 48	3421	50 29 55	3431	49 8 14	3443
27	Venus E.	58 12 33	3447	56 51 10	3438	55 29 36	3426	54 7 51	3418
	SUN E.	96 28 11	3376	95 5 25	3365	93 42 29	3356	92 19 22	3346
	Saturn W.	79 24 4	2998	80 56 26	2986	82 29 3	2973	84 1 55	2961
	Antares W.	63 55 47	2998	65 26 7	2961	66 56 44	2967	68 27 38	2963
	α Pegasi E.	42 23 44	3332	41 3 54	3360	39 44 35	3360	38 25 50	3327
	Venus E.	47 15 58	3356	45 52 54	3346	44 29 35	3332	43 6 0	3318
	SUN E.	85 20 41	3298	83 56 15	3276	82 31 35	3262	81 6 38	3248
28	Saturn W.	91 50 35	2799	93 25 14	2776	95 0 13	2761	96 35 31	2746
	Antares W.	76 6 46	2977	77 39 34	2963	79 12 42	2946	80 46 11	2929
	α Aquilæ W.	35 7 8	4464	36 11 33	4327	37 18 1	4202	38 26 25	4089
	Venus E.	36 3 51	3341	34 38 30	3226	33 12 50	3206	31 46 49	3169
	SUN E.	73 57 44	3178	72 31 3	3160	71 4 2	3141	69 36 42	3124
29	Saturn W.	104 37 21	2664	106 14 49	2647	107 52 40	2630	109 30 54	2613
	Antares W.	88 38 55	2747	90 14 33	2729	91 50 34	2711	93 26 59	2693
	α Aquilæ W.	44 33 11	3659	45 50 49	3583	47 9 42	3518	48 29 46	3466
	SUN E.	62 14 52	3037	60 45 25	3019	59 15 38	3001	57 45 24	2983
30	Antares W.	101 34 49	2606	103 13 33	2591	104 52 40	2574	106 32 10	2567
	α Aquilæ W.	55 25 51	3206	56 51 54	3163	58 18 47	3122	59 46 29	3063
	SUN E.	50 8 38	2690	48 36 6	2672	47 3 11	2653	45 29 52	2636

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
23	Spica W.	67° 48' 45"	3091	69° 17' 6"	3091	70° 45' 27"	3090	72° 13' 48"	3090
	Saturn W.	37 22 50	3096	38 51 53	3096	40 20 56	3096	41 50 0	3096
	Jupiter E.	62 19 0	3143	60 51 42	3143	59 24 25	3143	57 57 8	3143
	Fomalhaut E.	66 36 25	3506	65 16 10	3519	63 56 6	3530	62 36 15	3543
	α Pegasi E.	80 53 38	3333	79 30 4	3335	78 6 33	3338	76 43 5	3341
	Venus E.	84 58 21	3528	83 38 29	3529	82 18 37	3529	80 58 44	3528
	SUN E.	123 40 59	3455	122 19 47	3455	120 58 35	3455	119 37 23	3455
24	Spica W.	79 35 56	3081	81 4 29	3078	82 33 6	3074	84 1 47	3070
	Saturn W.	49 15 41	3046	50 44 57	3043	52 14 17	3039	53 43 42	3034
	Antares W.	34 43 32	3252	36 8 40	3236	37 34 6	3221	38 59 50	3208
	Jupiter E.	50 40 30	3136	49 13 4	3133	47 45 34	3130	46 18 1	3126
	Fomalhaut E.	56 0 33	3513	54 42 13	3531	53 24 13	3550	52 6 32	3571
	α Pegasi E.	69 46 37	3356	68 23 29	3356	67 0 25	3361	65 37 24	3365
	Venus E.	74 19 7	3520	72 59 4	3516	71 38 58	3512	70 18 48	3508
	SUN E.	112 51 5	3447	111 29 42	3444	110 8 15	3440	108 46 44	3436
25	Spica W.	91 26 39	3043	92 55 59	3037	94 25 26	3030	95 55 2	3023
	Saturn W.	61 12 10	3006	62 42 13	3001	64 12 24	2994	65 42 44	2986
	Antares W.	46 12 24	3145	47 39 39	3133	49 7 9	3121	50 34 53	3109
	Jupiter E.	38 58 58	3102	37 30 51	3096	36 2 36	3090	34 34 14	3083
	Fomalhaut E.	45 44 17	3503	44 29 19	3528	43 14 56	3576	42 1 12	3518
	α Pegasi E.	58 43 24	3395	57 20 50	3391	55 58 23	3397	54 36 3	3404
	Venus E.	63 36 33	3490	62 15 46	3473	60 54 51	3464	59 33 46	3456
	SUN E.	101 57 39	3407	100 35 30	3400	99 13 13	3392	97 50 47	3383
26	Spica W.	103 25 28	2979	104 56 7	2969	106 26 59	2959	107 58 3	2948
	Saturn W.	73 17 0	2942	74 48 26	2931	76 20 5	2920	77 51 58	2909
	Antares W.	57 57 15	3047	59 26 29	3034	60 55 59	3022	62 25 45	3009
	Jupiter E.	27 10 14	3046	25 40 58	3038	24 11 33	3030	22 41 57	3022
	α Pegasi E.	47 46 46	3455	46 25 32	3471	45 4 35	3486	43 43 58	3509
	Venus E.	52 45 55	3407	51 23 46	3395	50 1 24	3383	48 38 48	3371
	SUN E.	90 56 4	3335	89 32 33	3324	88 8 49	3313	86 44 52	3300
27	Saturn W.	85 35 4	2946	87 8 30	2935	88 42 14	2921	90 16 15	2906
	Antares W.	69 58 50	2938	71 30 21	2924	73 2 10	2909	74 34 18	2893
	α Pegasi E.	37 7 45	3568	35 50 24	3718	34 33 56	3775	33 18 28	3840
	Venus E.	41 42 9	3303	40 18 1	3288	38 53 36	3273	37 28 53	3257
	SUN E.	79 41 26	3234	78 15 56	3220	76 50 10	3204	75 24 6	3189
28	Saturn W.	98 11 10	2730	99 47 11	2713	101 23 32	2696	103 0 16	2681
	Antares W.	82 20 1	2813	83 54 12	2797	85 28 44	2780	87 3 39	2763
	α Aquilæ W.	39 36 37	3067	40 48 29	3093	42 1 56	3097	43 16 52	3127
	Venus E.	30 20 28	3173	28 53 46	3155	27 26 43	3138	25 59 19	3119
	SUN E.	68 9 2	3107	66 41 1	3090	65 12 39	3073	63 43 57	3055
29	Saturn W.	111 9 32	2596	112 48 33	2577	114 27 59	2560	116 7 49	2543
	Antares W.	95 3 47	2678	96 40 57	2660	98 18 31	2643	99 56 28	2626
	α Aquilæ W.	49 50 57	3401	51 13 12	3443	52 36 27	3496	54 0 41	3540
	SUN E.	56 14 49	2964	54 43 51	2946	53 12 30	2927	51 40 46	2909
30	Antares W.	108 12 4	2541	109 52 20	2523	111 32 59	2506	113 14 1	2489
	α Aquilæ W.	61 14 59	3047	62 44 14	3013	64 14 12	2978	65 44 52	2946
	SUN E.	43 56 10	2618	42 22 4	2799	40 47 36	2763	39 12 44	2764

AT GREENWICH APPARENT NOON

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
		^h ^m ^s	^s	[°] ['] ["]	["]		^s	^m ^s	^s	
Wed.	1	2 32 47.68	9.539	N.15 1 6.0	45.50	15 54.20	66.04	2 58.84	0.317	
Thur.	2	2 36 36.86	9.562	15 19 10.5	44.88	15 53.96	66.12	3 6.20	0.294	
Fri.	3	2 40 26.60	9.585	15 37 0.0	44.24	15 53.73	66.20	3 13.00	0.271	
Sat.	4	2 44 16.89	9.608	15 54 34.1	43.59	15 53.50	66.28	3 19.24	0.248	
Sun.	5	2 48 7.73	9.631	16 11 52.3	42.93	15 53.27	66.36	3 24.94	0.225	
Mon.	6	2 51 59.13	9.654	16 28 54.3	42.25	15 53.05	66.44	3 30.08	0.202	
Tues.	7	2 55 51.08	9.677	16 45 39.9	41.56	15 52.83	66.52	3 34.67	0.179	
Wed.	8	2 59 43.59	9.700	17 2 8.9	40.86	15 52.61	66.60	3 38.70	0.156	
Thur.	9	3 3 36.66	9.723	17 18 21.0	40.14	15 52.40	66.68	3 42.18	0.133	
Fri.	10	3 7 30.28	9.746	17 34 15.7	39.41	15 52.19	66.76	3 45.10	0.110	
Sat.	11	3 11 24.46	9.770	17 49 52.5	38.67	15 51.98	66.84	3 47.47	0.087	
Sun.	12	3 15 19.19	9.793	18 5 11.3	37.91	15 51.78	66.93	3 49.29	0.064	
Mon.	13	3 19 14.49	9.816	18 20 12.0	37.15	15 51.58	67.02	3 50.55	0.041	
Tues.	14	3 23 10.35	9.839	18 34 54.4	36.37	15 51.39	67.10	3 51.25	0.017	
Wed.	15	3 27 6.77	9.862	18 49 18.0	35.58	15 51.19	67.18	3 51.39	0.007	
Thur.	16	3 31 3.74	9.886	19 3 22.4	34.78	15 51.00	67.26	3 50.97	0.030	
Fri.	17	3 35 1.28	9.909	19 17 7.3	33.97	15 50.81	67.34	3 50.00	0.053	
Sat.	18	3 38 59.37	9.932	19 30 32.7	33.15	15 50.62	67.42	3 48.46	0.076	
Sun.	19	3 42 58.01	9.955	19 43 38.3	32.32	15 50.43	67.50	3 46.37	0.099	
Mon.	20	3 46 57.22	9.978	19 56 23.8	31.47	15 50.25	67.58	3 43.72	0.122	
Tues.	21	3 50 56.99	10.001	20 8 48.9	30.61	15 50.07	67.66	3 40.51	0.145	
Wed.	22	3 54 57.31	10.024	20 20 53.4	29.75	15 49.89	67.73	3 36.76	0.168	
Thur.	23	3 58 58.17	10.047	20 32 37.2	28.88	15 49.71	67.81	3 32.47	0.190	
Fri.	24	4 2 59.57	10.069	20 44 0.0	28.00	15 49.54	67.88	3 27.64	0.212	
Sat.	25	4 7 1.50	10.091	20 55 1.4	27.11	15 49.37	67.95	3 22.27	0.234	
Sun.	26	4 11 3.95	10.112	21 5 41.2	26.21	15 49.20	68.02	3 16.38	0.256	
Mon.	27	4 15 6.92	10.133	21 15 59.2	25.30	15 49.04	68.09	3 9.99	0.276	
Tues.	28	4 19 10.39	10.153	21 25 55.4	24.38	15 48.88	68.15	3 3.11	0.296	
Wed.	29	4 23 14.34	10.173	21 35 29.6	23.45	15 48.73	68.21	2 55.74	0.316	
Thur.	30	4 27 18.75	10.192	21 44 41.2	22.51	15 48.58	68.27	2 47.90	0.336	
Fri.	31	4 31 23.62	10.211	21 53 30.1	21.56	15 48.43	68.33	2 39.62	0.354	
Sat.	32	4 35 28.92	10.228	N.22 1 56.3	20.61	15 48.29	68.39	2 30.90	0.372	

NOTE.— Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

NOTE.— Mean Time of the Semi-diameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	N. [°] ['] ["]	^s	^m ^s	^s	^h ^m ^s
Wed.	1	2 32 48.15	9.539	N. 15° 1' 8.3	45.50	2 58.86	0.317	2 35 47.01
Thur.	2	2 36 37.35	9.562	15 19 12.8	44.88	3 6.22	0.294	2 39 43.57
Fri.	3	2 40 27.11	9.585	15 37 2.4	44.24	3 13.01	0.271	2 43 40.12
Sat.	4	2 44 17.42	9.608	15 54 36.6	43.59	3 19.25	0.248	2 47 36.67
Sun.	5	2 48 8.28	9.631	16 11 54.9	42.93	3 24.95	0.225	2 51 33.23
Mon.	6	2 51 59.69	9.654	16 28 56.8	42.25	3 30.09	0.202	2 55 29.78
Tues.	7	2 55 51.66	9.677	16 45 42.3	41.56	3 34.68	0.179	2 59 26.34
Wed.	8	2 59 44.18	9.700	17 2 11.3	40.86	3 38.71	0.156	3 3 22.89
Thur.	9	3 3 37.26	9.723	17 18 23.4	40.14	3 42.19	0.133	3 7 19.45
Fri.	10	3 7 30.89	9.746	17 34 18.1	39.41	3 45.11	0.110	3 11 16.00
Sat.	11	3 11 25.08	9.770	17 49 54.9	38.67	3 47.48	0.087	3 15 12.56
Sun.	12	3 15 19.82	9.793	18 5 13.7	37.91	3 49.29	0.064	3 19 9.11
Mon.	13	3 19 15.12	9.816	18 20 14.4	37.15	3 50.55	0.041	3 23 5.67
Tues.	14	3 23 10.98	9.839	18 34 56.7	36.37	3 51.24	0.017	3 27 2.22
Wed.	15	3 27 7.40	9.862	18 49 20.2	35.58	3 51.38	0.007	3 30 58.78
Thur.	16	3 31 4.37	9.886	19 3 24.6	34.78	3 50.96	0.030	3 34 55.33
Fri.	17	3 35 1.91	9.909	19 17 9.5	33.97	3 49.98	0.053	3 38 51.89
Sat.	18	3 39 0.00	9.932	19 30 34.8	33.15	3 48.44	0.076	3 42 48.44
Sun.	19	3 42 58.64	9.955	19 43 40.3	32.32	3 46.36	0.099	3 46 45.00
Mon.	20	3 46 57.84	9.978	19 56 25.8	31.47	3 43.71	0.122	3 50 41.55
Tues.	21	3 50 57.60	10.001	20 8 50.8	30.61	3 40.51	0.145	3 54 38.11
Wed.	22	3 54 57.91	10.024	20 20 55.2	29.75	3 36.75	0.168	3 58 34.66
Thur.	23	3 58 58.76	10.047	20 32 38.9	28.88	3 32.46	0.190	4 2 31.22
Fri.	24	4 3 0.15	10.069	20 44 1.6	28.00	3 27.63	0.212	4 6 27.78
Sat.	25	4 7 2.07	10.091	20 55 2.9	27.11	3 22.26	0.236	4 10 24.33
Sun.	26	4 11 4.51	10.112	21 5 42.6	26.21	3 16.38	0.256	4 14 20.89
Mon.	27	4 15 7.46	10.133	21 16 0.6	25.30	3 9.98	0.276	4 18 17.44
Tues.	28	4 19 10.91	10.153	21 25 56.7	24.38	3 3.09	0.296	4 22 14.00
Wed.	29	4 23 14.84	10.173	21 35 30.7	23.45	2 55.72	0.316	4 26 10.56
Thur.	30	4 27 19.23	10.192	21 44 42.2	22.51	2 47.88	0.336	4 30 7.11
Fri.	31	4 31 24.07	10.211	21 53 31.1	21.56	2 39.60	0.354	4 34 3.67
Sat.	32	4 35 29.35	10.228	N. 22° 1' 57.3	20.61	2 30.88	0.372	4 38 0.23

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	121	40° 37' 44.3	37 31.7	145.50	+0.00	0.0035363	45.5	21 20 42.61	
2	122	41 35 55.4	35 42.7	145.43	-0.12	.0036447	44.8	21 16 46.70	
3	123	42 34 4.9	33 52.1	145.36	0.22	.0037515	44.1	21 12 50.79	
4	124	43 32 12.6	31 59.7	145.29	0.31	.0038566	43.4	21 8 54.88	
5	125	44 30 18.6	30 5.5	145.22	0.37	.0039599	42.7	21 4 58.97	
6	126	45 28 22.8	28 9.6	145.14	0.39	.0040614	41.9	21 1 3.06	
7	127	46 26 25.2	26 11.9	145.07	0.38	.0041611	41.2	20 57 7.15	
8	128	47 24 25.8	24 12.4	144.99	-0.35	.0042591	40.5	20 53 11.24	
9	129	48 22 24.7	22 11.1	144.92	0.29	.0043555	39.8	20 49 15.33	
10	130	49 20 21.7	20 7.9	144.84	0.20	.0044504	39.2	20 45 19.43	
11	131	50 18 16.9	18 3.0	144.77	-0.08	.0045440	38.6	20 41 23.52	
12	132	51 16 10.2	15 56.2	144.69	+0.04	.0046363	38.1	20 37 27.61	
13	133	52 14 1.8	13 47.7	144.61	0.18	.0047271	37.6	20 33 31.70	
14	134	53 11 51.7	11 37.5	144.54	0.31	.0048170	37.2	20 29 35.79	
15	135	54 9 39.9	9 25.5	144.47	0.44	.0049057	36.8	20 25 39.88	
16	136	55 7 26.5	7 12.0	144.41	0.56	.0049934	36.4	20 21 43.97	
17	137	56 5 11.5	4 56.9	144.35	0.65	.0050802	36.0	20 17 48.06	
18	138	57 2 55.0	2 40.3	144.29	0.73	.0051660	35.6	20 13 52.15	
19	139	58 0 37.2	0 22.3	144.23	0.78	.0052509	35.2	20 9 56.25	
20	140	58 58 18.1	58 3.0	144.18	0.80	.0053349	34.8	20 6 0.34	
21	141	59 55 57.7	55 42.5	144.13	0.78	.0054179	34.4	20 2 4.43	
22	142	60 53 36.3	53 21.0	144.08	0.73	.0054999	33.9	19 58 8.52	
23	143	61 51 13.8	50 58.4	144.04	0.66	.0055807	33.4	19 54 12.61	
24	144	62 48 50.3	48 34.7	144.00	0.57	.0056601	32.8	19 50 16.70	
25	145	63 46 25.8	46 10.0	143.96	0.45	.0057381	32.1	19 46 20.79	
26	146	64 44 0.5	43 44.6	143.93	0.32	.0058145	31.4	19 42 24.88	
27	147	65 41 34.3	41 18.3	143.89	0.19	.0058890	30.6	19 38 28.96	
28	148	66 39 7.2	38 51.0	143.85	+0.06	.0059617	29.8	19 34 33.05	
29	149	67 36 39.3	36 22.9	143.81	-0.06	.0060325	29.0	19 30 37.14	
30	150	68 34 10.5	33 53.9	143.77	0.17	.0061013	28.2	19 26 41.23	
31	151	69 31 40.8	31 24.1	143.73	0.26	.0061677	27.2	19 22 45.32	
32	152	70 29 10.3	28 53.5	143.70	-0.32	0.0062317	26.2	19 18 49.40	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S										
Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	Diff. for 1 hour.			
							h m	m		
1	15 55.8	16 3.0	58 21.4	+2.21	58 47.6	+2.13	22 22.7	2.17	26.6	
2	16 9.7	16 16.0	59 12.5	2.00	59 35.5	1.81	23 15.9	2.28	27.6	
3	16 21.5	16 26.2	59 55.8	1.57	60 13.1	1.29	6		28.6	
4	16 30.0	16 32.7	60 26.8	0.98	60 36.7	+0.65	0 11.9	2.39	0.2	
5	16 34.3	16 34.7	60 42.5	+0.31	60 44.2	-0.03	1 10.6	2.48	1.2	
6	16 34.1	16 32.4	60 41.8	-0.36	60 35.6	0.66	2 11.0	2.54	2.2	
7	16 29.7	16 26.2	60 25.9	0.94	60 13.1	1.18	3 11.9	2.52	3.2	
8	16 22.0	16 17.3	59 57.6	1.37	59 40.1	1.53	4 11.7	2.45	4.2	
9	16 12.1	16 6.6	59 21.0	1.64	59 0.8	1.71	5 9.2	2.34	5.2	
10	16 0.9	15 55.1	58 39.9	1.75	58 18.8	1.76	6 3.7	2.21	6.2	
11	15 49.4	15 43.8	57 57.8	1.74	57 37.1	1.70	6 55.2	2.09	7.2	
12	15 38.3	15 33.0	57 17.0	1.65	56 57.6	1.58	7 44.2	2.00	8.2	
13	15 28.0	15 23.2	56 39.0	1.51	56 21.4	1.43	8 31.2	1.93	9.2	
14	15 18.6	15 14.3	56 4.7	1.35	55 48.9	1.27	9 17.1	1.90	10.2	
15	15 10.3	15 6.6	55 34.2	1.19	55 20.5	1.10	10 2.5	1.89	11.2	
16	15 3.1	14 59.9	55 7.8	1.02	54 56.0	0.94	10 47.9	1.90	12.2	
17	14 57.0	14 54.3	54 45.3	0.85	54 35.6	0.77	11 33.8	1.92	13.2	
18	14 52.0	14 49.9	54 26.9	0.68	54 19.3	0.58	12 20.3	1.95	14.2	
19	14 48.2	14 46.8	54 12.9	0.48	54 7.7	0.37	13 7.3	1.97	15.2	
20	14 45.7	14 45.1	54 3.9	-0.26	54 1.5	-0.13	13 54.6	1.98	16.2	
21	14 44.9	14 45.1	54 0.7	+0.01	54 1.7	+0.16	14 42.1	1.97	17.2	
22	14 45.9	14 47.2	54 4.5	0.31	54 9.2	0.47	15 29.3	1.96	18.2	
23	14 49.0	14 51.5	54 16.0	0.65	54 25.0	0.84	16 16.0	1.94	19.2	
24	14 54.5	14 58.2	54 36.2	1.03	54 49.7	1.22	17 2.3	1.92	20.2	
25	15 2.5	15 7.4	55 5.4	1.41	55 23.4	1.59	17 48.4	1.92	21.2	
26	15 12.9	15 19.0	55 43.7	1.77	56 6.0	1.94	18 34.7	1.94	22.2	
27	15 25.6	15 32.6	56 30.2	2.09	56 56.1	2.22	19 21.7	1.99	23.2	
28	15 40.0	15 47.7	57 23.4	2.31	57 51.6	2.37	20 10.2	2.07	24.2	
29	15 55.6	16 3.3	58 20.4	2.39	58 49.0	2.36	21 1.1	2.18	25.2	
30	16 10.9	16 18.2	59 16.9	2.27	59 43.5	2.12	21 54.9	2.31	26.2	
31	16 24.8	16 30.7	60 7.9	1.91	60 29.4	1.65	22 52.0	2.45	27.2	
32	16 35.6	16 39.0	60 47.5	+1.34	61 1.6	+0.99	23 52.3	2.56	28.2	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s		N. 0 20 3.4		0	h m s		N. 8 55 6.1	
1	0 12 32.22	2.1789	0 30 54.8	10.862	1	2 1 13.18	2.3603	9 5 14.6	10.084
2	0 14 43.05	2.1820	0 41 47.1	10.878	2	2 3 34.93	2.3647	9 15 18.2	10.086
3	0 16 54.06	2.1851	0 52 40.1	10.896	3	2 5 56.94	2.3690	9 25 18.9	9.986
4	0 19 5.26	2.1882	1 3 33.6	10.897	4	2 8 19.21	2.3733	9 35 16.5	9.986
5	0 21 16.64	2.1913	1 14 27.7	10.906	5	2 10 41.73	2.3776	9 45 11.0	9.983
6	0 23 28.21	2.1944	1 25 22.2	10.912	6	2 13 4.51	2.3819	9 55 2.3	9.978
7	0 25 39.97	2.1976	1 36 17.1	10.918	7	2 15 27.56	2.3862	10 4 50.3	9.778
8	0 27 51.93	2.2009	1 47 12.4	10.924	8	2 17 50.86	2.3906	10 14 35.0	9.716
9	0 30 4.08	2.2041	1 58 7.9	10.928	9	2 20 14.43	2.3949	10 24 16.2	9.686
10	0 32 16.43	2.2074	2 9 3.7	10.931	10	2 22 38.25	2.3993	10 33 53.9	9.690
11	0 34 28.97	2.2106	2 19 59.6	10.933	11	2 25 2.34	2.4036	10 43 27.9	9.636
12	0 36 41.72	2.2142	2 30 55.6	10.938	12	2 27 26.69	2.4079	10 52 58.2	9.478
13	0 38 54.67	2.2177	2 41 51.6	10.933	13	2 29 51.29	2.4123	11 2 24.7	9.409
14	0 41 7.83	2.2213	2 52 47.5	10.931	14	2 32 16.15	2.4166	11 11 47.3	9.344
15	0 43 21.21	2.2247	3 3 43.3	10.928	15	2 34 41.27	2.4208	11 21 6.0	9.277
16	0 45 34.79	2.2282	3 14 38.9	10.924	16	2 37 6.65	2.4251	11 30 20.6	9.208
17	0 47 48.59	2.2318	3 25 34.2	10.919	17	2 39 32.28	2.4294	11 39 31.0	9.138
18	0 50 2.61	2.2354	3 36 29.2	10.913	18	2 41 58.17	2.4336	11 48 37.2	9.067
19	0 52 16.84	2.2390	3 47 23.8	10.906	19	2 44 24.31	2.4379	11 57 39.1	8.995
20	0 54 31.29	2.2427	3 58 17.9	10.898	20	2 46 50.71	2.4421	12 6 36.6	8.921
21	0 56 45.96	2.2464	4 9 11.5	10.888	21	2 49 17.36	2.4463	12 15 29.6	8.846
22	0 59 0.85	2.2501	4 20 4.2	10.876	22	2 51 44.26	2.4506	12 24 18.0	8.768
23	1 1 15.97	2.2539	4 30 56.5	10.863	23	2 54 11.42	2.4548	N. 12 23 1.8	8.690
24	1 3 31.32	2.2577				2 56 38.82			
THURSDAY 2.					SATURDAY 4.				
0	1 5 46.89	2.2615	N. 4 41 48.0	10.850	0	2 59 6.47	2.4590	N. 12 41 40.8	8.611
1	1 8 2.69	2.2653	4 52 38.6	10.836	1	3 1 34.37	2.4630	12 50 15.1	8.531
2	1 10 18.73	2.2692	5 3 28.3	10.820	2	3 4 2.51	2.4670	12 58 44.5	8.449
3	1 12 35.00	2.2731	5 14 16.9	10.803	3	3 6 30.89	2.4709	13 7 8.9	8.366
4	1 14 51.50	2.2770	5 25 4.5	10.783	4	3 8 59.51	2.4749	13 15 28.3	8.281
5	1 17 8.24	2.2810	5 35 50.9	10.763	5	3 11 28.37	2.4789	13 23 42.6	8.196
6	1 19 25.22	2.2850	5 46 36.1	10.743	6	3 13 57.47	2.4829	13 31 54.7	8.107
7	1 21 42.44	2.2890	5 57 20.0	10.720	7	3 16 26.80	2.4869	13 39 55.5	8.018
8	1 23 59.90	2.2931	6 8 2.5	10.696	8	3 18 56.36	2.4909	13 47 53.9	7.926
9	1 26 17.61	2.2972	6 18 43.5	10.671	9	3 21 26.16	2.4947	13 55 46.9	7.837
10	1 28 35.56	2.3013	6 29 23.0	10.646	10	3 23 56.18	2.4986	14 3 34.3	7.744
11	1 30 53.76	2.3054	6 40 0.9	10.618	11	3 26 26.42	2.5026	14 11 16.1	7.650
12	1 33 12.20	2.3094	6 50 37.1	10.589	12	3 28 56.89	2.5066	14 18 52.3	7.555
13	1 35 30.89	2.3135	7 1 11.5	10.558	13	3 31 27.56	2.5106	14 26 22.7	7.456
14	1 37 49.83	2.3177	7 11 44.0	10.526	14	3 33 58.48	2.5146	14 33 47.3	7.359
15	1 40 9.02	2.3219	7 22 14.6	10.493	15	3 36 29.39	2.5186	14 41 5.9	7.261
16	1 42 28.46	2.3261	7 32 43.1	10.459	16	3 39 0.92	2.5226	14 48 18.6	7.161
17	1 44 48.16	2.3304	7 43 9.5	10.422	17	3 41 32.45	2.5267	14 55 25.2	7.060
18	1 47 8.11	2.3346	7 53 33.7	10.385	18	3 44 4.19	2.5306	15 2 25.7	6.957
19	1 49 28.31	2.3388	8 3 55.6	10.346	19	3 46 36.13	2.5346	15 9 20.0	6.853
20	1 51 48.77	2.3431	8 14 15.2	10.306	20	3 49 8.26	2.5387	15 16 8.0	6.748
21	1 54 9.49	2.3474	8 24 32.3	10.264	21	3 51 40.59	2.5428	15 22 49.6	6.641
22	1 56 30.46	2.3517	8 34 46.9	10.221	22	3 54 13.10	2.5468	15 29 24.9	6.534
23	1 58 51.69	2.3560	8 44 58.8	10.177	23	3 56 45.80	2.5509	15 35 53.7	6.426
24	2 1 13.18	2.3603	N. 8 55 8.1	10.131	24	3 59 18.09	2.5549	N. 15 42 16.0	6.317

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 5.					TUESDAY 7.				
0	3 59 18.69	2.5496	N.15 42 16.0	6.317	0	6 3 35.57	2.5920	N.18 24 54.4	0.280
1	4 1 51.75	2.5525	15 48 31.7	6.206	1	6 6 11.11	2.5917	18 25 7.2	6.148
2	4 4 24.99	2.5554	15 54 40.7	6.096	2	6 8 46.57	2.5903	18 25 12.2	0.016
3	4 6 58.40	2.5583	16 0 43.1	5.983	3	6 11 21.93	2.5888	18 25 9.2	0.115
4	4 9 31.97	2.5609	16 6 38.7	5.870	4	6 13 57.19	2.5867	18 24 58.4	0.246
5	4 12 5.71	2.5636	16 12 27.5	5.756	5	6 16 32.34	2.5849	18 24 39.7	0.377
6	4 14 39.60	2.5662	16 18 9.4	5.641	6	6 19 7.38	2.5830	18 24 18.1	0.506
7	4 17 13.64	2.5686	16 23 44.4	5.526	7	6 21 42.30	2.5810	18 23 56.8	0.636
8	4 19 47.83	2.5710	16 29 12.5	5.410	8	6 24 17.10	2.5789	18 22 56.6	0.766
9	4 22 22.16	2.5733	16 34 33.5	5.292	9	6 26 51.77	2.5768	18 22 6.7	0.897
10	4 24 56.63	2.5756	16 39 47.5	5.173	10	6 29 26.31	2.5745	18 21 8.9	1.026
11	4 27 31.23	2.5778	16 44 54.3	5.053	11	6 32 0.71	2.5721	18 20 3.5	1.154
12	4 30 5.97	2.5799	16 49 54.0	4.932	12	6 34 34.96	2.5696	18 18 50.4	1.282
13	4 32 40.83	2.5820	16 54 46.3	4.811	13	6 37 9.06	2.5671	18 17 29.7	1.409
14	4 35 15.81	2.5839	16 59 31.3	4.689	14	6 39 43.01	2.5645	18 16 1.3	1.536
15	4 37 50.90	2.5858	17 4 9.0	4.567	15	6 42 16.80	2.5618	18 14 25.3	1.662
16	4 40 26.10	2.5875	17 8 39.3	4.443	16	6 44 50.42	2.5590	18 12 41.8	1.788
17	4 43 1.40	2.5893	17 13 2.2	4.319	17	6 47 23.87	2.5561	18 10 50.7	1.914
18	4 45 36.80	2.5909	17 17 17.6	4.194	18	6 49 57.15	2.5532	18 8 52.1	2.039
19	4 48 12.29	2.5923	17 21 25.5	4.069	19	6 52 30.25	2.5503	18 6 46.1	2.163
20	4 50 47.87	2.5937	17 25 25.9	3.943	20	6 55 3.17	2.5470	18 4 32.6	2.286
21	4 53 23.53	2.5949	17 29 18.7	3.817	21	6 57 35.90	2.5438	18 2 11.7	2.409
22	4 55 59.26	2.5961	17 33 3.9	3.690	22	7 0 8.43	2.5406	17 59 43.5	2.531
23	4 58 35.06	2.5972	N.17 36 41.4	3.562	23	7 2 40.77	2.5373	N.17 57 8.0	2.653
MONDAY 6.					WEDNESDAY 8.				
0	5 1 10.92	2.5992	N.17 40 11.2	3.434	0	7 5 12.90	2.5393	N.17 54 25.2	2.773
1	5 3 46.84	2.5992	17 43 33.4	3.306	1	7 7 44.83	2.5364	17 51 35.2	2.898
2	5 6 22.82	2.6001	17 46 47.9	3.178	2	7 10 16.55	2.5339	17 48 38.0	3.018
3	5 8 58.84	2.6008	17 49 54.6	3.047	3	7 12 48.06	2.5323	17 45 33.6	3.133
4	5 11 34.91	2.6014	17 52 53.5	2.917	4	7 15 19.35	2.5196	17 42 22.2	3.250
5	5 14 11.01	2.6018	17 55 44.6	2.787	5	7 17 50.42	2.5169	17 39 3.7	3.367
6	5 16 47.13	2.6023	17 58 27.9	2.656	6	7 20 21.26	2.5131	17 35 38.2	3.483
7	5 19 23.28	2.6027	18 1 3.3	2.524	7	7 22 51.87	2.5083	17 32 5.7	3.598
8	5 21 59.45	2.6030	18 3 30.8	2.393	8	7 25 22.26	2.5044	17 28 26.4	3.713
9	5 24 35.63	2.6030	18 5 50.4	2.262	9	7 27 52.41	2.5005	17 24 40.2	3.827
10	5 27 11.81	2.6030	18 8 2.2	2.130	10	7 30 22.32	2.4966	17 20 47.2	3.940
11	5 29 47.99	2.6030	18 10 6.1	1.998	11	7 32 51.99	2.4924	17 16 47.5	4.051
12	5 32 24.17	2.6029	18 12 2.0	1.866	12	7 35 21.41	2.4883	17 12 41.1	4.162
13	5 35 0.34	2.6028	18 13 50.0	1.734	13	7 37 50.59	2.4842	17 8 28.0	4.273
14	5 37 36.50	2.6025	18 15 30.1	1.603	14	7 40 19.51	2.4800	17 4 8.4	4.382
15	5 40 12.64	2.6020	18 17 2.3	1.470	15	7 42 48.18	2.4757	16 59 42.3	4.489
16	5 42 48.74	2.6014	18 18 26.5	1.338	16	7 45 16.59	2.4714	16 55 9.7	4.596
17	5 45 24.80	2.6008	18 19 42.8	1.205	17	7 47 44.75	2.4671	16 50 30.7	4.703
18	5 48 0.81	2.5997	18 20 51.1	1.073	18	7 50 12.64	2.4627	16 45 45.3	4.808
19	5 50 36.77	2.5986	18 21 51.5	0.940	19	7 52 40.27	2.4583	16 40 53.7	4.913
20	5 53 12.67	2.5978	18 22 43.9	0.808	20	7 55 7.63	2.4538	16 35 55.8	5.016
21	5 55 48.51	2.5967	18 23 28.4	0.676	21	7 57 34.73	2.4493	16 30 51.7	5.119
22	5 58 24.27	2.5955	18 24 5.0	0.544	22	8 0 1.55	2.4448	16 25 41.5	5.221
23	6 0 59.96	2.5943	18 24 33.7	0.412	23	8 2 28.10	2.4403	16 20 25.3	5.321
24	6 3 35.57	2.5930	N.18 24 54.4	0.280	24	8 4 54.36	2.4357	N.16 15 3.0	5.420

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	DIF. for 1 m.	Declination.	DIF. for 1 m.	Hour.	Right Ascension.	DIF. for 1 m.	Declination.	DIF. for 1 m.
THURSDAY 9.					SATURDAY 11.				
0	8 4 54.38	2.4387	N.16 15 3.0	6.420	0	9 56 21.86	2.2113	N.10 20 30.6	6.240
1	8 7 20.38	2.4311	16 9 34.8	6.519	1	9 58 34.41	2.2070	10 11 32.8	6.267
2	8 9 46.11	2.4283	16 4 0.7	6.616	2	10 0 46.70	2.2028	10 2 32.2	6.293
3	8 12 11.56	2.4218	15 58 20.8	6.713	3	10 2 58.75	2.1987	9 53 28.8	6.378
4	8 14 36.73	2.4171	15 52 35.2	6.807	4	10 5 10.54	2.1946	9 44 22.8	6.422
5	8 17 1.62	2.4134	15 46 43.9	6.902	5	10 7 22.08	2.1908	9 35 14.2	6.465
6	8 19 26.22	2.4077	15 40 47.0	6.996	6	10 9 33.38	2.1863	9 26 3.0	6.507
7	8 21 50.54	2.4030	15 34 44.5	6.087	7	10 11 44.44	2.1823	9 16 49.3	6.549
8	8 24 14.58	2.3983	15 28 36.5	6.178	8	10 13 55.25	2.1783	9 7 33.1	6.590
9	8 26 38.33	2.3934	15 22 23.1	6.268	9	10 16 5.82	2.1743	8 58 14.6	6.632
10	8 29 1.79	2.3887	15 16 4.3	6.358	10	10 18 16.16	2.1703	8 48 53.7	6.677
11	8 31 24.97	2.3839	15 9 40.2	6.446	11	10 20 26.26	2.1664	8 39 30.6	6.724
12	8 33 47.86	2.3791	15 3 10.8	6.533	12	10 22 36.13	2.1626	8 30 5.2	6.769
13	8 36 10.46	2.3743	14 56 36.3	6.618	13	10 24 45.77	2.1588	8 20 37.7	6.815
14	8 38 32.78	2.3695	14 49 56.6	6.703	14	10 26 55.18	2.1549	8 11 8.1	6.861
15	8 40 54.81	2.3647	14 43 11.9	6.788	15	10 29 4.37	2.1513	8 1 36.4	6.904
16	8 43 16.54	2.3599	14 36 22.3	6.880	16	10 31 13.34	2.1476	7 52 2.8	6.956
17	8 45 37.99	2.3550	14 29 27.7	6.969	17	10 33 22.08	2.1439	7 42 27.3	6.997
18	8 47 59.14	2.3501	14 22 28.3	7.059	18	10 35 30.61	2.1403	7 32 49.9	7.038
19	8 50 20.01	2.3453	14 15 24.1	7.149	19	10 37 38.93	2.1368	7 23 10.7	7.080
20	8 52 40.58	2.3405	14 8 15.1	7.239	20	10 39 47.03	2.1333	7 13 29.7	7.121
21	8 55 0.87	2.3357	14 1 1.5	7.328	21	10 41 54.92	2.1298	7 3 47.0	7.162
22	8 57 20.86	2.3308	13 53 43.3	7.417	22	10 44 2.61	2.1264	6 54 2.7	7.202
23	8 59 40.56	2.3260	N.13 46 20.5	7.506	23	10 46 10.09	2.1230	N. 6 44 16.8	7.243
FRIDAY 10.					SUNDAY 12.				
0	9 1 59.98	2.3213	N.13 38 53.3	7.591	0	10 48 17.37	2.1196	N. 6 34 29.4	7.283
1	9 4 19.11	2.3165	13 31 21.7	7.680	1	10 50 24.45	2.1163	6 24 40.5	7.327
2	9 6 37.96	2.3117	13 23 45.7	7.768	2	10 52 31.33	2.1130	6 14 50.1	7.371
3	9 8 56.52	2.3069	13 16 5.5	7.856	3	10 54 38.02	2.1098	6 4 58.4	7.415
4	9 11 14.79	2.3021	13 8 21.1	7.945	4	10 56 44.51	2.1067	5 55 5.4	7.459
5	9 13 32.78	2.2974	13 0 32.6	8.033	5	10 58 50.82	2.1036	5 45 11.1	7.503
6	9 15 50.48	2.2926	12 52 40.0	8.121	6	11 0 56.94	2.1006	5 35 15.6	7.547
7	9 18 7.90	2.2879	12 44 43.5	8.209	7	11 3 2.88	2.0974	5 25 18.9	7.591
8	9 20 25.03	2.2833	12 36 43.0	8.297	8	11 5 8.63	2.0944	5 15 21.1	7.635
9	9 22 41.88	2.2786	12 28 38.5	8.385	9	11 7 14.21	2.0915	5 5 22.3	7.679
10	9 24 58.45	2.2739	12 20 30.3	8.473	10	11 9 19.61	2.0886	4 55 22.5	7.723
11	9 27 14.74	2.2693	12 12 18.3	8.561	11	11 11 24.84	2.0858	4 45 21.7	7.767
12	9 29 30.76	2.2647	12 4 2.6	8.649	12	11 13 29.90	2.0830	4 35 20.0	7.811
13	9 31 46.50	2.2601	11 55 43.3	8.737	13	11 15 34.79	2.0802	4 25 17.5	7.855
14	9 34 1.97	2.2555	11 47 20.5	8.825	14	11 17 39.52	2.0775	4 15 14.1	7.899
15	9 36 17.16	2.2509	11 38 54.2	8.913	15	11 19 44.09	2.0748	4 5 10.0	7.943
16	9 38 32.08	2.2464	11 30 24.5	9.001	16	11 21 48.50	2.0722	3 55 5.3	7.987
17	9 40 46.73	2.2419	11 21 51.4	9.089	17	11 23 52.76	2.0697	3 44 59.8	8.031
18	9 43 1.11	2.2375	11 13 15.0	9.177	18	11 25 56.86	2.0671	3 34 53.8	8.075
19	9 45 15.23	2.2331	11 4 35.3	9.265	19	11 28 0.81	2.0646	3 24 47.2	8.119
20	9 47 29.08	2.2287	10 55 52.5	9.353	20	11 30 4.61	2.0621	3 14 40.2	8.163
21	9 49 42.67	2.2243	10 47 6.5	9.441	21	11 32 8.27	2.0596	3 4 32.7	8.207
22	9 51 55.99	2.2199	10 38 17.5	9.529	22	11 34 11.79	2.0571	2 54 24.8	8.251
23	9 54 9.05	2.2156	10 29 25.5	9.617	23	11 36 15.17	2.0546	2 44 16.6	8.295
24	9 56 21.86	2.2113	N.10 20 30.6	9.705	24	11 38 18.41	2.0520	N. 2 34 8.0	8.339

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 13.					WEDNESDAY 15.				
0	11 38 18.41	2.0430	N. 2° 34' 8.0	10.145	0	13 15 6.12	1.9903	S. 5° 23' 51.3	9.497
1	11 40 21.52	2.0408	2 23 50.2	10.149	1	13 17 5.80	1.9901	5 33 20.2	9.466
2	11 42 24.50	2.0405	2 13 50.1	10.153	2	13 19 5.65	1.9900	5 42 47.2	9.435
3	11 44 27.35	2.0404	2 3 40.9	10.154	3	13 21 5.40	1.9900	5 52 12.4	9.403
4	11 46 30.07	2.0403	1 53 31.6	10.156	4	13 23 5.14	1.9907	6 1 35.6	9.370
5	11 48 32.07	2.0423	1 43 22.2	10.157	5	13 25 4.88	1.9906	6 10 56.0	9.337
6	11 50 35.15	2.0404	1 33 12.8	10.156	6	13 27 4.61	1.9906	6 20 16.1	9.304
7	11 52 37.52	2.0385	1 23 3.5	10.155	7	13 29 4.34	1.9905	6 29 33.3	9.270
8	11 54 39.77	2.0365	1 12 54.2	10.154	8	13 31 4.07	1.9904	6 38 48.5	9.235
9	11 56 41.91	2.0346	1 2 45.0	10.153	9	13 33 3.80	1.9904	6 48 1.5	9.199
10	11 58 43.94	2.0330	0 52 36.0	10.149	10	13 35 3.54	1.9907	6 57 12.4	9.163
11	12 0 45.86	2.0313	0 42 27.2	10.144	11	13 37 3.28	1.9906	7 6 21.1	9.127
12	12 2 47.68	2.0295	0 32 18.7	10.139	12	13 39 3.03	1.9906	7 15 27.6	9.090
13	12 4 49.40	2.0279	0 22 10.5	10.134	13	13 41 2.78	1.9906	7 24 31.8	9.051
14	12 6 51.03	2.0263	0 12 2.6	10.128	14	13 43 2.55	1.9903	7 33 33.7	9.012
15	12 8 52.56	2.0247	N. 0 1 55.1	10.123	15	13 45 2.33	1.9905	7 42 33.2	8.973
16	12 10 53.99	2.0232	S. 0 8 12.0	10.114	16	13 47 2.13	1.9907	7 51 30.4	8.933
17	12 12 55.33	2.0217	0 18 18.6	10.106	17	13 49 1.94	1.9910	8 0 25.2	8.893
18	12 14 56.59	2.0203	0 28 24.6	10.098	18	13 51 1.77	1.9913	8 9 17.5	8.852
19	12 16 57.76	2.0188	0 38 30.1	10.087	19	13 53 1.62	1.9917	8 18 7.4	8.810
20	12 18 58.85	2.0174	0 48 35.0	10.077	20	13 55 1.49	1.9920	8 26 54.7	8.767
21	12 20 59.86	2.0162	0 58 39.2	10.066	21	13 57 1.38	1.9924	8 35 39.4	8.724
22	12 23 0.79	2.0150	1 8 42.8	10.055	22	13 59 1.30	1.9928	8 44 21.6	8.681
23	12 25 1.65	2.0138	S. 1 18 45.6	10.045	23	14 1 1.24	1.9933	S. 8 53 1.2	8.637
TUESDAY 14.					THURSDAY 16.				
0	12 27 2.44	2.0126	S. 1 28 47.6	10.037	0	14 3 1.20	1.9938	S. 9 1 38.1	8.593
1	12 29 3.16	2.0114	1 38 48.8	10.033	1	14 5 1.19	2.0000	9 10 12.3	8.547
2	12 31 3.81	2.0108	1 48 49.1	9.998	2	14 7 1.21	2.0006	9 18 43.7	8.501
3	12 33 4.40	2.0098	1 58 48.5	9.983	3	14 9 1.26	2.0012	9 27 12.4	8.455
4	12 35 4.92	2.0088	2 8 46.9	9.968	4	14 11 1.35	2.0018	9 35 38.3	8.408
5	12 37 5.38	2.0078	2 18 44.4	9.949	5	14 13 1.47	2.0023	9 44 1.3	8.360
6	12 39 5.79	2.0064	2 28 40.8	9.931	6	14 15 1.62	2.0029	9 52 21.5	8.313
7	12 41 6.15	2.0054	2 38 36.1	9.913	7	14 17 1.81	2.0035	10 0 38.8	8.263
8	12 43 6.45	2.0046	2 48 30.3	9.893	8	14 19 2.04	2.0041	10 8 53.1	8.213
9	12 45 6.70	2.0039	2 58 23.3	9.873	9	14 21 2.31	2.0048	10 17 4.4	8.163
10	12 47 6.91	2.0030	3 8 15.1	9.858	10	14 23 2.61	2.0054	10 25 12.7	8.113
11	12 49 7.07	2.0023	3 18 5.7	9.839	11	14 25 2.95	2.0061	10 33 18.0	8.063
12	12 51 7.19	2.0016	3 27 55.0	9.810	12	14 27 3.34	2.0068	10 41 20.2	8.016
13	12 53 7.27	2.0010	3 37 42.9	9.787	13	14 29 3.77	2.0075	10 49 19.3	7.968
14	12 55 7.31	2.0004	3 47 29.5	9.764	14	14 31 4.24	2.0082	10 57 15.2	7.926
15	12 57 7.31	1.9996	3 57 14.7	9.741	15	14 33 4.76	2.0090	11 5 7.9	7.883
16	12 59 7.28	1.9988	4 6 58.4	9.716	16	14 35 5.32	2.0098	11 12 57.5	7.799
17	13 1 7.24	1.9980	4 16 40.6	9.691	17	14 37 5.93	2.0106	11 20 43.8	7.745
18	13 3 7.13	1.9968	4 26 21.3	9.665	18	14 39 6.59	2.0114	11 28 26.9	7.698
19	13 5 7.04	1.9970	4 36 0.4	9.639	19	14 41 7.30	2.0122	11 36 6.6	7.634
20	13 7 6.88	1.9975	4 45 38.0	9.613	20	14 43 8.05	2.0130	11 43 43.0	7.578
21	13 9 6.72	1.9979	4 55 13.9	9.584	21	14 45 8.85	2.0138	11 51 16.0	7.523
22	13 11 6.56	1.9983	5 4 48.1	9.556	22	14 47 9.71	2.0146	11 58 45.7	7.466
23	13 13 6.34	1.9985	5 14 20.6	9.527	23	14 49 10.61	2.0154	12 6 11.9	7.408
24	13 15 6.12	1.9988	S. 5 23 51.3	9.497	24	14 51 11.57	2.0164	S. 12 13 34.6	7.350

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 17.					SUNDAY 19.				
0	14 51 11.57	2.0164	S. 12° 13' 34.6	7.360	0	16 29 4.28	2.0611	S. 16° 50' 35.2	4.034
1	14 53 12.58	2.0173	12 20 53.9	7.393	1	16 31 7.97	2.0616	16 54 34.9	3.966
2	14 55 13.65	2.0183	12 28 9.6	7.333	2	16 33 11.70	2.0626	16 58 29.9	3.877
3	14 57 14.77	2.0191	12 35 21.8	7.173	3	16 35 15.48	2.0633	17 2 20.2	3.788
4	14 59 15.94	2.0200	12 42 30.3	7.113	4	16 37 19.30	2.0640	17 6 5.7	3.719
5	15 1 17.17	2.0209	12 49 35.2	7.092	5	16 39 23.16	2.0648	17 9 46.5	3.639
6	15 3 18.45	2.0219	12 56 36.5	6.991	6	16 41 27.07	2.0655	17 13 22.5	3.580
7	15 5 19.79	2.0228	13 3 34.1	6.929	7	16 43 31.02	2.0662	17 16 53.7	3.480
8	15 7 21.19	2.0236	13 10 28.0	6.867	8	16 45 35.01	2.0669	17 20 20.2	3.400
9	15 9 22.65	2.0246	13 17 18.1	6.804	9	16 47 39.04	2.0676	17 23 41.8	3.320
10	15 11 24.16	2.0257	13 24 4.5	6.741	10	16 49 43.11	2.0682	17 26 58.6	3.240
11	15 13 25.73	2.0266	13 30 47.1	6.678	11	16 51 47.22	2.0688	17 30 10.6	3.169
12	15 15 27.35	2.0275	13 37 25.9	6.614	12	16 53 51.36	2.0694	17 33 17.7	3.078
13	15 17 29.03	2.0285	13 44 0.8	6.560	13	16 55 55.54	2.0700	17 36 19.9	2.997
14	15 19 30.77	2.0295	13 50 31.9	6.485	14	16 57 59.76	2.0706	17 39 17.3	2.916
15	15 21 32.57	2.0305	13 56 59.0	6.419	15	17 0 4.01	2.0711	17 42 9.8	2.835
16	15 23 34.43	2.0315	14 3 22.2	6.358	16	17 2 8.29	2.0717	17 44 57.4	2.753
17	15 25 36.35	2.0325	14 9 41.5	6.297	17	17 4 12.60	2.0722	17 47 40.1	2.671
18	15 27 38.33	2.0335	14 15 56.7	6.230	18	17 6 16.95	2.0727	17 50 17.9	2.589
19	15 29 40.37	2.0344	14 22 7.9	6.163	19	17 8 21.33	2.0732	17 52 50.8	2.507
20	15 31 42.46	2.0354	14 28 15.0	6.096	20	17 10 25.73	2.0737	17 55 18.7	2.425
21	15 33 44.62	2.0364	14 34 18.1	6.018	21	17 12 30.16	2.0741	17 57 41.7	2.343
22	15 35 46.83	2.0374	14 40 17.1	5.949	22	17 14 34.62	2.0746	17 59 59.7	2.259
23	15 37 49.10	2.0383	S. 14 46 12.0	5.880	23	17 16 39.10	2.0749	S. 18 2 12.7	2.176
SATURDAY 18.					MONDAY 20.				
0	15 39 51.43	2.0393	S. 14 52 2.7	5.811	0	17 18 43.61	2.0753	S. 18 4 20.8	2.093
1	15 41 53.82	2.0403	14 57 49.2	5.741	1	17 20 48.13	2.0758	18 6 23.8	2.009
2	15 43 56.27	2.0413	15 3 31.6	5.671	2	17 22 52.68	2.0760	18 8 21.9	1.926
3	15 45 58.78	2.0423	15 9 9.7	5.600	3	17 24 57.25	2.0763	18 10 15.0	1.843
4	15 48 1.34	2.0433	15 14 43.6	5.529	4	17 27 1.84	2.0766	18 12 3.0	1.760
5	15 50 3.97	2.0443	15 20 13.2	5.458	5	17 29 6.45	2.0769	18 13 46.0	1.675
6	15 52 6.65	2.0452	15 25 38.6	5.386	6	17 31 11.07	2.0772	18 15 24.0	1.591
7	15 54 9.39	2.0461	15 30 59.6	5.314	7	17 33 15.71	2.0774	18 16 56.9	1.507
8	15 56 12.18	2.0471	15 36 16.3	5.241	8	17 35 20.36	2.0776	18 18 24.8	1.423
9	15 58 15.03	2.0480	15 41 28.6	5.168	9	17 37 25.02	2.0778	18 19 47.6	1.338
10	16 0 17.94	2.0489	15 46 36.5	5.096	10	17 39 29.70	2.0780	18 21 5.4	1.254
11	16 2 20.90	2.0498	15 51 40.1	5.023	11	17 41 34.39	2.0783	18 22 18.1	1.169
12	16 4 23.92	2.0507	15 56 39.2	4.948	12	17 43 39.08	2.0783	18 23 25.7	1.085
13	16 6 26.99	2.0517	16 1 33.8	4.873	13	17 45 43.78	2.0784	18 24 28.3	1.001
14	16 8 30.12	2.0526	16 6 24.0	4.798	14	17 47 48.49	2.0786	18 25 25.8	0.917
15	16 10 33.30	2.0535	16 11 9.7	4.723	15	17 49 53.20	2.0786	18 26 18.2	0.833
16	16 12 36.54	2.0544	16 15 50.8	4.648	16	17 51 57.92	2.0786	18 27 5.6	0.748
17	16 14 39.83	2.0553	16 20 27.4	4.573	17	17 54 2.64	2.0787	18 27 47.9	0.663
18	16 16 43.17	2.0562	16 24 59.5	4.497	18	17 56 7.36	2.0787	18 28 25.2	0.578
19	16 18 46.56	2.0570	16 29 27.0	4.420	19	17 58 12.08	2.0787	18 28 57.3	0.493
20	16 20 50.01	2.0579	16 33 49.9	4.343	20	18 0 16.80	2.0786	18 29 24.4	0.409
21	16 22 53.51	2.0587	16 38 8.2	4.266	21	18 2 21.52	2.0786	18 29 46.4	0.324
22	16 24 57.05	2.0595	16 42 21.8	4.189	22	18 4 26.23	2.0786	18 30 3.3	0.240
23	16 27 0.64	2.0603	16 46 30.8	4.112	23	18 6 30.94	2.0784	18 30 15.1	0.156
24	16 29 4.28	2.0611	S. 16 50 35.2	4.034	24	18 8 35.64	2.0783	S. 18 30 21.9	0.070

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 21.					THURSDAY 23.				
0	18 8 35.64	2.0788	S. 18 30 21.9	0.070	0	19 47 53.66	2.0641	S. 16 57 31.5	3.884
1	18 10 40.33	2.0782	18 30 23.5	0.015	1	19 49 56.88	2.0623	16 53 36.1	3.962
2	18 12 45.02	2.0781	18 30 20.1	0.099	2	19 52 0.05	2.0626	16 49 36.1	4.039
3	18 14 49.70	2.0779	18 30 11.6	0.184	3	19 54 3.18	2.0618	16 45 31.5	4.116
4	18 16 54.37	2.0777	18 29 58.0	0.269	4	19 56 6.26	2.0611	16 41 22.2	4.193
5	18 18 59.03	2.0776	18 29 39.3	0.354	5	19 58 9.30	2.0603	16 37 8.3	4.270
6	18 21 3.67	2.0773	18 29 15.5	0.438	6	20 0 12.29	2.0596	16 32 49.8	4.347
7	18 23 8.30	2.0770	18 28 46.6	0.523	7	20 2 15.23	2.0587	16 28 26.7	4.423
8	18 25 12.91	2.0767	18 28 12.7	0.608	8	20 4 18.13	2.0580	16 23 59.0	4.499
9	18 27 17.50	2.0764	18 27 33.7	0.693	9	20 6 20.99	2.0573	16 19 26.8	4.575
10	18 29 22.08	2.0761	18 26 49.6	0.777	10	20 8 23.80	2.0565	16 14 50.0	4.651
11	18 31 26.64	2.0758	18 26 0.5	0.861	11	20 10 26.56	2.0557	16 10 8.7	4.726
12	18 33 31.18	2.0755	18 25 6.3	0.945	12	20 12 29.28	2.0550	16 5 22.9	4.801
13	18 35 35.70	2.0752	18 24 7.1	1.029	13	20 14 31.95	2.0542	16 0 32.6	4.876
14	18 37 40.20	2.0748	18 23 2.8	1.113	14	20 16 34.58	2.0535	15 55 37.9	4.950
15	18 39 44.67	2.0745	18 21 53.5	1.197	15	20 18 37.16	2.0527	15 50 38.7	5.024
16	18 41 49.12	2.0739	18 20 39.1	1.281	16	20 20 39.70	2.0520	15 45 35.1	5.098
17	18 43 53.54	2.0735	18 19 19.7	1.365	17	20 22 42.20	2.0513	15 40 27.0	5.172
18	18 45 57.94	2.0731	18 17 55.3	1.449	18	20 24 44.65	2.0505	15 35 14.5	5.245
19	18 48 2.31	2.0726	18 16 25.9	1.533	19	20 26 47.06	2.0498	15 29 57.7	5.317
20	18 50 6.65	2.0722	18 14 51.5	1.615	20	20 28 49.43	2.0491	15 24 36.5	5.390
21	18 52 10.97	2.0717	18 13 12.1	1.698	21	20 30 51.76	2.0484	15 19 10.9	5.462
22	18 54 15.25	2.0712	18 11 27.7	1.781	22	20 32 54.04	2.0477	15 13 41.0	5.534
23	18 56 19.50	2.0706	S. 18 9 38.3	1.866	23	20 34 56.28	2.0471	S. 15 8 6.8	5.606
WEDNESDAY 22.					FRIDAY 24.				
0	18 58 23.72	2.0701	S. 18 7 43.9	1.948	0	20 36 58.49	2.0464	S. 15 2 28.4	5.677
1	19 0 27.91	2.0695	18 5 44.6	2.030	1	20 39 0.66	2.0456	14 56 45.7	5.748
2	19 2 32.06	2.0690	18 3 40.3	2.113	2	20 41 2.79	2.0451	14 50 58.7	5.806
3	19 4 36.18	2.0684	18 1 31.1	2.196	3	20 43 4.88	2.0446	14 45 7.5	5.876
4	19 6 40.27	2.0678	17 59 16.9	2.278	4	20 45 6.93	2.0439	14 39 12.2	5.938
5	19 8 44.32	2.0673	17 56 57.8	2.360	5	20 47 8.95	2.0433	14 33 12.7	6.007
6	19 10 48.33	2.0666	17 54 33.7	2.442	6	20 49 10.93	2.0427	14 27 9.0	6.076
7	19 12 52.30	2.0659	17 52 4.7	2.524	7	20 51 12.87	2.0421	14 21 1.2	6.146
8	19 14 56.24	2.0653	17 49 30.8	2.606	8	20 53 14.78	2.0415	14 14 49.2	6.213
9	19 17 0.14	2.0647	17 46 52.0	2.688	9	20 55 16.66	2.0410	14 8 33.2	6.301
10	19 19 4.00	2.0640	17 44 8.3	2.769	10	20 57 18.50	2.0405	14 2 18.1	6.369
11	19 21 7.82	2.0633	17 41 19.8	2.849	11	20 59 20.32	2.0400	13 55 48.9	6.437
12	19 23 11.60	2.0627	17 38 26.4	2.930	12	21 1 22.10	2.0395	13 49 20.7	6.504
13	19 25 15.34	2.0620	17 35 28.2	3.011	13	21 3 23.86	2.0390	13 42 48.5	6.570
14	19 27 19.04	2.0613	17 32 25.1	3.091	14	21 5 25.58	2.0385	13 36 12.3	6.637
15	19 29 22.70	2.0606	17 29 17.2	3.172	15	21 7 27.27	2.0380	13 29 32.1	6.703
16	19 31 26.31	2.0599	17 26 4.5	3.252	16	21 9 28.94	2.0376	13 22 48.0	6.768
17	19 33 29.88	2.0592	17 22 47.0	3.332	17	21 11 30.59	2.0372	13 15 59.9	6.833
18	19 35 33.41	2.0585	17 19 24.7	3.411	18	21 13 32.21	2.0368	13 9 8.0	6.898
19	19 37 36.90	2.0578	17 15 57.7	3.490	19	21 15 33.81	2.0364	13 2 12.2	6.962
20	19 39 40.34	2.0571	17 12 25.9	3.569	20	21 17 35.38	2.0361	12 55 12.5	7.027
21	19 41 43.74	2.0563	17 8 49.4	3.648	21	21 19 36.94	2.0358	12 48 9.0	7.091
22	19 43 47.09	2.0556	17 5 8.1	3.727	22	21 21 38.48	2.0355	12 41 1.6	7.154
23	19 45 50.40	2.0548	17 1 22.2	3.806	23	21 23 40.00	2.0352	12 33 50.5	7.217
24	19 47 53.66	2.0541	S. 16 57 31.5	3.884	24	21 25 41.50	2.0349	S. 12 26 35.6	7.280

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 25.					MONDAY 27.				
0	21 25 41.50	2.9249	S. 12° 26' 35.6"	7.280	0	23 3 0.52	2.0486	S. 5° 33' 33.7"	9.744
1	21 27 42.99	2.9247	12 19 17.0	7.342	1	23 5 12.55	2.0619	5 23 47.8	9.783
2	21 29 44.46	2.9245	12 11 54.6	7.403	2	23 7 15.67	2.0628	5 13 59.9	9.821
3	21 31 45.92	2.9243	12 4 28.6	7.464	3	23 9 18.88	2.0643	5 4 9.4	9.858
4	21 33 47.38	2.9242	11 56 58.9	7.525	4	23 11 22.18	2.0659	4 54 16.8	9.896
5	21 35 48.83	2.9241	11 49 25.6	7.585	5	23 13 25.58	2.0676	4 44 22.0	9.931
6	21 37 50.27	2.9239	11 41 48.7	7.645	6	23 15 29.09	2.0690	4 34 25.1	9.966
7	21 39 51.70	2.9238	11 34 8.2	7.705	7	23 17 32.70	2.0610	4 24 26.1	10.001
8	21 41 53.13	2.9236	11 26 24.1	7.764	8	23 19 36.41	2.0626	4 14 25.0	10.035
9	21 43 54.55	2.9235	11 18 36.5	7.823	9	23 21 40.23	2.0647	4 4 21.9	10.068
10	21 45 55.98	2.9234	11 10 45.4	7.881	10	23 23 44.17	2.0660	3 54 16.8	10.101
11	21 47 57.41	2.9232	11 2 50.8	7.938	11	23 25 48.92	2.0669	3 44 9.8	10.133
12	21 49 58.84	2.9230	10 54 52.8	7.996	12	23 27 52.38	2.0704	3 34 0.9	10.164
13	21 52 0.28	2.9240	10 46 51.3	8.053	13	23 29 56.67	2.0723	3 23 50.1	10.195
14	21 54 1.72	2.9241	10 38 46.4	8.110	14	23 32 1.08	2.0746	3 13 37.5	10.225
15	21 56 3.17	2.9243	10 30 38.1	8.166	15	23 34 5.62	2.0767	3 3 23.1	10.256
16	21 58 4.63	2.9245	10 22 26.5	8.223	16	23 36 10.28	2.0786	2 53 6.9	10.284
17	22 0 6.10	2.9247	10 14 11.5	8.278	17	23 38 15.07	2.0810	2 42 49.0	10.312
18	22 2 7.59	2.9250	10 5 53.2	8.333	18	23 40 20.00	2.0833	2 32 29.5	10.339
19	22 4 9.10	2.9252	9 57 31.6	8.386	19	23 42 25.07	2.0857	2 22 8.3	10.365
20	22 6 10.62	2.9255	9 49 6.8	8.440	20	23 44 30.28	2.0880	2 11 45.6	10.392
21	22 8 12.16	2.9258	9 40 38.7	8.494	21	23 46 35.63	2.0904	2 1 21.3	10.417
22	22 10 13.73	2.9260	9 32 7.5	8.547	22	23 48 41.13	2.0929	1 50 55.6	10.441
23	22 12 15.32	2.9267	S. 9° 23' 33.1"	8.599	23	23 50 46.78	2.0954	S. 1° 40' 28.4"	10.464
SUNDAY 26.					TUESDAY 28.				
0	22 14 16.93	2.9271	S. 9° 14' 55.6"	8.651	0	23 52 52.58	2.0980	S. 1° 29' 59.9"	10.487
1	22 16 18.57	2.9276	9 6 14.9	8.708	1	23 54 58.54	2.1006	1 19 30.0	10.509
2	22 18 20.24	2.9281	8 57 31.2	8.764	2	23 57 4.65	2.1033	1 8 58.8	10.530
3	22 20 21.95	2.9286	8 48 44.5	8.804	3	23 59 10.93	2.1060	0 58 26.4	10.550
4	22 22 23.69	2.9294	8 39 54.7	8.854	4	0 1 17.37	2.1089	0 47 52.8	10.569
5	22 24 25.47	2.9299	8 31 1.9	8.904	5	0 3 23.98	2.1116	0 37 18.1	10.586
6	22 26 27.29	2.9307	8 22 6.2	8.953	6	0 5 30.76	2.1145	0 26 42.2	10.604
7	22 28 29.15	2.9314	8 13 7.5	9.004	7	0 7 37.71	2.1174	0 16 5.3	10.622
8	22 30 31.06	2.9321	8 4 6.0	9.050	8	0 9 44.84	2.1203	S. 0° 5' 27.4"	10.639
9	22 32 33.01	2.9329	7 55 1.6	9.097	9	0 11 52.15	2.1233	N. 0° 5' 11.5"	10.655
10	22 34 35.01	2.9336	7 45 54.4	9.144	10	0 13 59.64	2.1264	0 15 51.2	10.669
11	22 36 37.06	2.9347	7 36 44.4	9.190	11	0 16 7.32	2.1295	0 26 31.8	10.683
12	22 38 39.17	2.9356	7 27 31.6	9.236	12	0 18 15.18	2.1326	0 37 13.2	10.696
13	22 40 41.33	2.9365	7 18 16.0	9.283	13	0 20 23.23	2.1358	0 47 55.3	10.708
14	22 42 43.55	2.9374	7 8 57.8	9.327	14	0 22 31.48	2.1391	0 58 38.1	10.719
15	22 44 45.83	2.9386	6 59 36.9	9.371	15	0 24 39.93	2.1425	1 9 21.6	10.730
16	22 46 48.18	2.9397	6 50 13.3	9.415	16	0 26 48.58	2.1460	1 20 5.6	10.739
17	22 48 50.59	2.9409	6 40 47.1	9.458	17	0 28 57.43	2.1496	1 30 50.1	10.748
18	22 50 53.07	2.9419	6 31 18.4	9.501	18	0 31 6.49	2.1533	1 41 35.1	10.755
19	22 52 55.62	2.9431	6 21 47.1	9.543	19	0 33 15.76	2.1569	1 52 20.5	10.760
20	22 54 58.24	2.9444	6 12 13.3	9.584	20	0 35 25.24	2.1606	2 3 6.2	10.764
21	22 57 0.94	2.9457	6 2 37.0	9.625	21	0 37 34.94	2.1643	2 13 52.2	10.769
22	22 59 3.72	2.9470	5 52 58.3	9.666	22	0 39 44.85	2.1679	2 24 38.5	10.773
23	23 1 6.58	2.9483	5 43 17.2	9.706	23	0 41 54.98	2.1706	2 35 24.9	10.774
24	23 3 9.52	2.9496	S. 5° 33' 33.7"	9.744	24	0 44 5.34	2.1745	N. 2° 46' 11.4"	10.776

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 29.					FRIDAY 31.				
0	0 44 5.34	2.1745	N. 2 46 11.4	10.776	0	2 33 35.15	2.4002	N. 11 3 9.5	9.444
1	0 46 15.92	2.1783	2 56 58.0	10.777	1	2 35 59.32	2.4056	11 12 34.2	9.389
2	0 48 26.74	2.1822	3 7 44.6	10.778	2	2 38 23.81	2.4108	11 21 55.3	9.330
3	0 50 37.79	2.1861	3 18 31.1	10.773	3	2 40 48.62	2.4161	11 31 12.6	9.287
4	0 52 49.07	2.1900	3 29 17.4	10.770	4	2 43 13.74	2.4214	11 40 26.1	9.193
5	0 55 0.59	2.1940	3 40 3.5	10.767	5	2 45 39.18	2.4267	11 49 35.6	9.126
6	0 57 12.35	2.1981	3 50 49.4	10.762	6	2 48 4.94	2.4320	11 58 41.1	9.087
7	0 59 24.36	2.2023	4 1 34.9	10.766	7	2 50 31.01	2.4373	12 7 42.5	9.987
8	1 1 36.61	2.2063	4 12 20.1	10.740	8	2 52 57.40	2.4425	12 16 39.6	9.916
9	1 3 49.11	2.2106	4 23 4.8	10.740	9	2 55 24.10	2.4477	12 25 32.4	9.844
10	1 6 1.87	2.2147	4 33 48.9	10.731	10	2 57 51.12	2.4530	12 34 20.9	9.770
11	1 8 14.88	2.2189	4 44 32.5	10.721	11	3 0 18.45	2.4583	12 43 4.9	9.695
12	1 10 28.14	2.2233	4 55 15.4	10.709	12	3 2 46.10	2.4634	12 51 44.3	9.618
13	1 12 41.66	2.2276	5 5 57.6	10.696	13	3 5 14.06	2.4686	13 0 19.0	9.540
14	1 14 55.45	2.2320	5 16 38.9	10.683	14	3 7 42.33	2.4737	13 8 49.1	9.461
15	1 17 9.50	2.2364	5 27 19.4	10.667	15	3 10 10.91	2.4788	13 17 14.4	9.380
16	1 19 23.82	2.2408	5 37 58.9	10.651	16	3 12 39.79	2.4840	13 25 34.7	9.297
17	1 21 38.40	2.2453	5 48 37.4	10.633	17	3 15 8.98	2.4891	13 33 50.0	9.213
18	1 23 53.26	2.2499	5 59 14.8	10.614	18	3 17 38.48	2.4942	13 42 0.2	9.128
19	1 26 8.39	2.2545	6 9 51.1	10.594	19	3 20 8.28	2.4993	13 50 5.3	9.041
20	1 28 23.80	2.2591	6 20 26.1	10.573	20	3 22 38.38	2.5043	13 58 5.1	7.953
21	1 30 39.48	2.2638	6 30 59.8	10.551	21	3 25 8.78	2.5093	14 5 59.6	7.863
22	1 32 55.45	2.2686	6 41 32.2	10.527	22	3 27 39.48	2.5141	14 13 48.6	7.772
23	1 35 11.70	2.2733	N. 6 52 3.1	10.502	23	3 30 10.47	2.5189	N. 14 21 32.1	7.679
THURSDAY 30.					SATURDAY, JUNE 1.				
0	1 37 28.24	2.2780	N. 7 2 32.4	10.476	0	3 32 41.75	2.5236	N. 14 29 10.1	7.585
1	1 39 45.07	2.2828	7 13 0.2	10.449	PHASES OF THE MOON. ● New Moon, . . . 3 19 40.3 ☾ First Quarter, . . . 10 10 4.3 ○ Full Moon, . . . 18 1 52.2 ☾ Last Quarter, . . . 26 5 21.9				
2	1 42 2.18	2.2876	7 23 26.2	10.419					
3	1 44 19.58	2.2925	7 33 50.5	10.389					
4	1 46 37.28	2.2974	7 44 12.9	10.368					
5	1 48 55.27	2.3023	7 54 33.4	10.335	☾ Perigee, 5 10.8 ☾ Apogee, 20 23.5				
6	1 51 13.56	2.3073	8 4 51.9	10.291					
7	1 53 32.15	2.3123	8 15 8.3	10.236					
8	1 55 51.04	2.3173	8 25 22.6	10.219					
9	1 58 10.23	2.3224	8 35 34.6	10.181					
10	2 0 29.73	2.3274	8 45 44.3	10.143					
11	2 2 49.53	2.3325	8 55 51.6	10.101					
12	2 5 9.63	2.3376	9 5 56.4	10.060					
13	2 7 30.04	2.3428	9 15 58.6	10.018					
14	2 9 50.76	2.3479	9 25 58.2	9.979					
15	2 12 11.79	2.3531	9 35 55.1	9.934					
16	2 14 33.13	2.3583	9 45 49.1	9.877					
17	2 16 54.78	2.3635	9 55 40.2	9.839					
18	2 19 16.75	2.3687	10 5 28.4	9.777					
19	2 21 39.03	2.3739	10 15 13.4	9.734					
20	2 24 1.62	2.3791	10 24 55.3	9.670					
21	2 26 24.53	2.3844	10 34 33.9	9.616					
22	2 28 47.75	2.3897	10 44 9.2	9.560					
23	2 31 11.29	2.3950	10 53 41.1	9.503					
24	2 33 35.15	2.4002	N. 11 3 9.5	9.444					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of DIST.	IIIh.	P. L. of DIST.	VIh.	P. L. of DIST.	IXh.	P. L. of DIST.
1	α Aquilæ W.	67 16 13	2915	68 48 13	2997	70 20 48	2999	71 54 0	2991
	Jupiter W.	30 10 47	2467	31 52 46	2449	33 35 11	2431	35 18 2	2413
	SUN E.	37 37 29	2749	36 1 53	2731	34 25 54	2716	32 49 35	2701
6	SUN W.	30 51 32	2306	32 35 10	2306	34 18 48	2400	36 2 23	2406
	Pollux E.	37 16 0	2910	35 30 15	2937	33 45 10	2968	32 0 50	2904
	Regulus E.	72 9 14	2973	70 17 31	2976	68 25 55	2981	66 34 26	2986
7	SUN W.	44 38 46	2431	46 21 37	2428	48 4 17	2447	49 46 45	2456
	Regulus E.	57 19 19	2130	55 28 51	2129	53 38 36	2126	51 48 35	2147
	Spica E.	110 50 51	2130	109 0 38	2136	107 10 37	2146	105 20 48	2156
8	SUN W.	58 15 47	2907	59 56 51	2917	61 37 40	2980	63 18 12	2943
	Regulus E.	42 42 15	2300	40 53 48	2312	39 5 39	2326	37 17 48	2337
	Spica E.	96 15 18	2306	94 26 58	2316	92 38 55	2326	90 51 9	2339
9	SUN W.	71 36 32	2907	73 15 18	2930	74 53 46	2984	76 31 55	2948
	Spica E.	81 56 42	2301	80 10 44	2313	78 25 4	2327	76 39 44	2340
	Saturn E.	111 10 53	2306	109 24 4	2379	107 37 34	2391	105 51 22	2394
10	SUN W.	84 38 0	2717	86 14 17	2733	87 50 15	2746	89 25 54	2760
	Pollux W.	24 34 46	2961	26 7 29	2966	27 41 8	2994	29 15 31	2777
	Spica E.	67 57 52	2407	66 14 27	2421	64 31 22	2434	62 48 36	2448
	Saturn E.	97 5 7	2369	95 20 48	2392	93 36 48	2396	91 53 8	2408
	Antares E.	113 34 0	2461	111 51 52	2473	110 10 1	2484	108 28 25	2496
11	SUN W.	97 19 33	2930	98 53 22	2944	100 26 53	2987	102 0 7	2971
	Pollux W.	37 13 44	2718	38 50 0	2715	40 26 20	2713	42 2 42	2714
	Mars W.	20 34 18	2909	22 8 34	2903	23 42 58	2900	25 17 26	2901
	Spica E.	54 19 35	2517	52 38 45	2530	50 58 14	2544	49 18 2	2567
	Saturn E.	83 19 19	2473	81 37 28	2486	79 55 54	2499	78 14 39	2511
	Antares E.	100 4 37	2556	98 24 42	2569	96 45 4	2581	95 5 43	2593
12	SUN W.	109 41 55	2936	111 13 26	2961	112 44 40	2964	114 15 38	2977
	Pollux W.	50 3 55	2731	51 39 54	2737	53 15 45	2742	54 51 29	2749
	Mars W.	33 8 57	2934	34 42 54	2931	36 16 41	2939	37 50 18	2948
	Spica E.	41 1 43	2937	39 23 25	2940	37 45 25	2945	36 7 45	2979
	Saturn E.	69 52 37	2973	68 13 3	2993	66 33 43	2995	64 54 41	2996
	Antares E.	86 53 3	2953	85 15 20	2966	83 37 54	2978	82 0 44	2989
13	SUN W.	121 46 32	2939	123 15 57	2961	124 45 7	2992	126 14 3	2974
	Pollux W.	62 47 51	2735	64 22 38	2732	65 57 16	2901	67 31 43	2906
	Mars W.	45 35 37	2992	47 8 6	2991	48 40 24	2910	50 12 30	2919
	Regulus W.	26 1 11	2703	27 37 47	2711	29 14 12	2719	30 50 26	2729
	Saturn E.	56 43 18	2990	55 5 45	2973	53 28 27	2993	51 51 23	2992
	Antares E.	73 58 48	2748	72 23 12	2760	70 47 51	2771	69 12 45	2788
14	SUN W.	133 35 6	2133	135 2 36	2143	136 29 53	2165	137 56 56	2166
	Pollux W.	75 21 23	2948	76 54 48	2967	78 28 2	2965	80 1 6	2973
	Mars W.	57 50 7	2963	59 21 5	2973	60 51 51	2993	62 22 26	2991
	Regulus W.	38 48 40	2772	40 23 45	2781	41 58 38	2789	43 33 20	2798
	Saturn E.	43 49 26	2741	42 13 41	2751	40 38 9	2760	39 2 48	2769
	Antares E.	61 21 5	2841	59 47 30	2853	58 14 11	2865	56 41 7	2877
15	Pollux W.	87 43 48	2913	89 15 50	2923	90 47 41	2930	92 19 22	2937

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	α Aquilæ W. Jupiter W. SUN E.	73° 27' 47" 37 1 19 31 12 57	2807 2804 2807	75° 2' 6" 38 45 3 29 36 0	2784 2877 2874	76° 36' 55" 40 29 11 27 58 45	2763 2869 2861	78° 12' 17" 42 13 44 26 21 13	2743 2843 2850
6	SUN W. Pollux E. Regulus E.	37 45 53 30 17 21 64 43 5	2407 2448 2093	39 29 18 28 34 54 62 51 53	2412 2800 2098	41 12 36 26 53 41 61 0 51	2417 2864 2105	42 55 46 25 13 56 59 9 59	2434 2641 2113
7	SUN W. Regulus E. Spica E.	51 29 1 49 58 48 103 31 13	2468 2187 2168	53 11 4 48 9 16 101 41 52	2475 2167 2174	54 52 53 46 19 59 99 52 45	2485 2178 2184	56 34 27 44 30 59 98 3 54	2495 2189 2194
8	SUN W. Regulus E. Spica E.	64 58 27 35 30 15 89 3 40	2254 2260 2261	66 38 25 33 43 2 87 16 29	2867 2263 2263	68 18 5 31 56 8 85 29 35	2260 2277 2275	69 57 27 30 9 35 83 42 59	2593 2291 2288
9	SUN W. Spica E. Saturn E.	78 9 45 74 54 43 104 5 29	2861 2253 2817	79 47 17 73 10 1 102 19 55	2875 2267 2231	81 24 30 71 25 39 100 34 40	2889 2280 2244	83 1 24 69 41 36 98 49 44	2703 2284 2267
10	SUN W. Pollux W. Spica E. Saturn E. Antares E.	91 1 15 30 50 29 61 6 9 90 9 45 106 47 6	2774 2787 2461 2422 2608	92 36 17 32 25 53 59 24 1 88 26 41 105 6 4	2788 2742 2475 2435 2820	94 11 1 34 1 37 57 42 13 86 43 56 103 25 18	2802 2732 2489 2448 2832	95 45 26 35 37 35 56 0 44 85 1 29 101 44 49	2816 2723 2503 2400 2844
11	SUN W. Pollux W. Mars W. Spica E. Saturn E. Antares E.	103 33 3 43 39 3 26 51 53 47 38 8 76 33 41 93 26 38	2884 2716 2893 2871 2822 2865	105 5 42 45 15 22 28 26 18 45 58 33 74 52 59 91 47 50	2888 2718 2806 2885 2835 2817	106 38 3 46 51 38 30 0 38 44 19 17 73 12 35 90 9 18	2912 2722 2811 2899 2848 2829	108 10 7 48 27 49 31 34 51 42 40 20 71 32 28 88 31 2	2924 2726 2817 2813 2869 2841
12	SUN W. Pollux W. Mars W. Spica E. Saturn E. Antares E.	115 46 20 56 27 4 39 23 44 34 30 25 63 15 54 80 23 49	2889 2756 2855 2885 2817 2701	117 16 46 58 2 30 40 56 59 32 53 25 61 37 22 78 47 10	3001 2783 2865 2700 2828 2713	118 46 57 59 37 47 42 30 3 31 16 45 59 59 5 77 10 47	3014 2770 2873 2718 2840 2725	120 16 52 61 12 54 44 2 56 29 40 26 58 21 5 75 34 40	3026 2778 2863 2733 2860 2736
13	SUN W. Pollux W. Mars W. Regulus W. Saturn E. Antares E.	127 42 44 69 6 0 51 44 25 32 26 28 50 14 32 67 37 55	3086 2817 2928 2798 2702 2785	129 11 11 70 40 6 53 16 7 34 2 18 48 37 55 66 3 20	3098 2825 2938 2746 2713 2806	130 39 23 72 14 2 54 47 39 35 37 57 47 1 33 64 29 0	3109 2832 2946 2765 2732 2818	132 7 22 73 47 48 56 18 59 37 13 24 45 25 23 62 54 55	3121 2841 2955 2763 2732 2829
14	SUN W. Pollux W. Mars W. Regulus W. Saturn E. Antares E.	139 23 46 81 33 59 63 52 51 45 7 51 37 27 40 55 8 19	3179 2881 2999 2806 2779 2889	140 50 20 83 6 42 65 23 5 46 42 11 35 52 45 53 35 46	3190 2890 3008 2815 2788 2901	142 16 41 84 39 14 66 53 8 48 16 20 34 18 2 52 3 29	3201 2898 3018 2832 2798 2914	143 42 49 86 11 36 68 23 0 49 50 19 32 43 31 50 31 28	3213 2905 3025 2831 2806 2927
15	Pollux W.	93 50 54	2946	95 22 15	2944	96 53 26	2992	98 24 27	2989

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15	Mars W.	69° 52' 43"	3033	71° 22' 15"	3041	72° 51' 37"	3049	74° 20' 49"	3057
	Regulus W.	51 24 7	2938	52 57 45	2947	54 31 12	2954	56 4 30	2962
	Saturn E.	31 9 11	2815	29 35 3	2825	28 1 7	2833	26 27 22	2843
	Antares E.	48 59 44	2940	47 28 16	2954	45 57 6	2968	44 26 13	2983
16	Pollux W.	99 55 18	2977	101 25 59	2986	102 56 29	2994	104 26 49	3001
	Mars W.	81 44 27	3004	83 12 43	3102	84 40 50	3110	86 8 48	3117
	Regulus W.	63 48 35	2898	65 20 56	2906	66 53 8	2912	68 25 11	2919
	Antares E.	36 56 43	3060	35 27 56	3061	33 59 35	3112	32 31 40	3126
	α Aquilæ E.	86 46 9	3033	85 22 36	3043	83 59 14	3052	82 36 3	3062
17	Mars W.	93 26 30	3151	94 53 38	3168	96 20 38	3164	97 47 30	3170
	Regulus W.	76 3 21	2992	77 34 34	2998	79 5 40	3064	80 36 38	3072
	Spica W.	22 50 54	3037	24 20 21	3083	25 49 53	3030	27 19 28	3020
	α Aquilæ E.	75 43 12	3421	74 21 19	3434	72 59 41	3448	71 38 19	3463
	Jupiter E.	110 59 39	2994	109 29 19	3000	107 59 6	3006	106 29 1	3013
18	Mars W.	104 59 58	3201	106 26 6	3207	107 52 8	3212	109 18 3	3218
	Regulus W.	88 9 39	2998	89 39 54	3003	91 10 3	3009	92 40 5	3013
	Spica W.	34 47 16	3037	36 16 43	3039	37 46 8	3041	39 15 30	3043
	α Aquilæ E.	64 55 54	3049	63 36 24	3069	62 17 16	3090	60 58 31	3092
	Fomalhaut E.	97 3 30	3049	95 40 15	3052	94 17 4	3066	92 53 57	3070
	Jupiter E.	99 0 21	3039	97 30 57	3046	96 1 40	3060	94 32 29	3066
19	Regulus W.	100 8 50	3036	101 38 18	3041	103 7 40	3044	104 36 58	3048
	Spica W.	46 41 30	3056	48 10 31	3062	49 39 27	3066	51 8 20	3072
	Saturn W.	18 5 15	3028	19 34 53	3030	21 4 28	3030	22 34 3	3033
	α Aquilæ E.	54 31 19	3748	53 15 23	3761	52 0 1	3817	50 45 16	3864
	Fomalhaut E.	85 59 38	3065	84 37 4	3090	83 14 36	3096	81 52 15	3402
	Jupiter E.	87 8 1	3079	85 39 23	3081	84 10 51	3096	82 42 23	3099
20	Spica W.	58 31 58	3079	60 0 33	3082	61 29 5	3083	62 57 35	3086
	Saturn W.	30 1 21	3043	31 30 41	3044	32 59 59	3046	34 29 15	3047
	Fomalhaut E.	75 2 26	3439	73 40 54	3447	72 19 31	3456	70 58 17	3466
	Jupiter E.	75 21 8	3105	73 53 4	3107	72 25 3	3110	70 57 5	3111
	α Pegasi E.	89 43 8	3012	88 19 12	3017	86 55 20	3020	85 31 32	3024
21	Spica W.	70 19 38	3091	71 47 59	3091	73 16 20	3091	74 44 41	3091
	Saturn W.	41 55 9	3042	43 24 17	3064	44 53 23	3063	46 22 30	3063
	Antares W.	25 54 3	3088	27 16 33	3090	28 39 35	3095	30 3 6	3103
	Jupiter E.	63 37 47	3119	62 10 0	3119	60 42 14	3119	59 14 28	3119
	Fomalhaut E.	64 14 54	3016	62 54 50	3031	61 35 0	3046	60 15 25	3056
	α Pegasi E.	78 33 31	3042	77 10 8	3046	75 46 49	3060	74 23 35	3063
	Venus E.	114 52 25	3036	113 32 40	3036	112 12 55	3036	110 53 10	3036
22	Spica W.	82 6 32	3067	83 34 58	3064	85 3 27	3062	86 31 58	3068
	Saturn W.	53 48 12	3048	55 17 25	3047	56 46 39	3044	58 15 57	3043
	Antares W.	37 6 12	3234	38 31 41	3222	39 57 24	3211	41 23 20	3200
	Jupiter E.	51 55 35	3116	50 27 45	3114	48 59 53	3113	47 31 59	3110
	Fomalhaut E.	53 41 40	3046	52 23 54	3066	51 6 31	3090	49 49 33	3116
	α Pegasi E.	67 28 36	3077	66 5 53	3092	64 43 16	3098	63 20 46	3098
	Venus E.	104 14 25	3032	102 54 36	3031	101 34 46	3027	100 14 52	3025
	Sun E.	136 46 59	3471	135 26 2	3469	134 5 2	3464	132 43 58	3460
	Spica W.	93 55 26	3063	95 24 21	3066	96 53 22	3058	98 22 29	3066

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15	Mars W.	75° 49' 52"	3086	77° 18' 45"	3073	78° 47' 28"	3080	80° 16' 3"	3087
	Regulus W.	57 37 38	2969	59 10 36	2976	60 43 25	2983	62 16 5	2991
	Saturn E.	24 53 50	2953	23 20 29	2963	21 47 21	2972	20 14 26	2980
	Antares E.	42 55 39	2996	41 25 24	3014	39 55 29	3031	38 25 55	3049
16	Pollux W.	105 57 0	3009	107 27 1	3018	108 56 51	3026	110 26 31	3034
	Mars W.	87 36 37	3124	89 4 18	3131	90 31 50	3138	91 59 14	3144
	Regulus W.	69 57 6	2926	71 28 52	2932	73 0 30	2939	74 32 0	2946
	Antares E.	31 4 14	3163	29 37 20	3193	28 11 2	3227	26 45 25	3266
	α Aquilæ E.	81 13 3	3273	79 50 16	3284	78 27 41	3296	77 5 20	3406
17	Mars W.	99 14 14	3177	100 40 51	3183	102 7 21	3189	103 33 43	3195
	Regulus W.	82 7 29	2976	83 38 12	2981	85 8 48	2987	86 39 17	2993
	Spica W.	28 49 4	3030	30 18 40	3031	31 48 14	3033	33 17 46	3034
	α Aquilæ E.	70 17 14	3419	68 56 26	3426	67 35 56	3433	66 15 45	3430
	Jupiter E.	104 59 3	3018	103 29 12	3023	101 59 28	3029	100 29 51	3034
18	Mars W.	110 43 51	3223	112 9 32	3228	113 35 8	3233	115 0 37	3239
	Regulus W.	94 10 2	3018	95 39 53	3023	97 9 38	3027	98 39 17	3032
	Spica W.	40 44 49	3046	42 14 5	3049	43 43 17	3053	45 12 25	3056
	α Aquilæ E.	59 40 10	3436	58 22 15	3463	57 4 47	3469	55 47 48	3717
	Fomalhaut E.	91 30 55	3264	90 7 57	3269	88 45 5	3274	87 22 19	3279
	Jupiter E.	93 3 24	3030	91 34 25	3036	90 5 32	3039	88 36 44	3073
19	Regulus W.	106 6 11	3052	107 35 19	3056	109 4 23	3059	110 33 23	3062
	Spica W.	52 37 10	3059	54 5 57	3073	55 34 40	3078	57 3 20	3077
	Saturn W.	24 3 35	3034	25 33 5	3036	27 2 33	3039	28 31 58	3040
	α Aquilæ E.	49 31 9	3406	48 17 44	3437	47 5 2	3465	45 53 8	4035
	Fomalhaut E.	80 30 1	3409	79 7 55	3416	77 45 57	3423	76 24 7	3431
	Jupiter E.	81 14 0	3092	79 45 41	3098	78 17 26	3099	76 49 15	3102
20	Spica W.	64 26 3	3087	65 54 29	3098	67 22 53	3099	68 51 16	3090
	Saturn W.	35 58 29	3048	37 27 42	3061	38 56 52	3062	40 26 1	3063
	Fomalhaut E.	69 37 14	3474	68 16 21	3486	66 55 40	3496	65 35 11	3496
	Jupiter E.	69 29 9	3114	68 1 16	3116	66 33 25	3116	65 5 35	3118
	α Pegasi E.	84 7 48	3237	82 44 8	3230	81 20 31	3234	79 56 59	3236
21	Spica W.	76 13 2	3091	77 41 23	3090	79 9 45	3089	80 38 8	3088
	Saturn W.	47 51 37	3052	49 20 45	3062	50 49 53	3062	52 19 2	3061
	Antares W.	31 27 2	3294	32 51 21	3276	34 16 1	3261	35 40 58	3247
	Jupiter E.	57 46 43	3119	56 18 57	3119	54 51 11	3119	53 23 24	3117
	Fomalhaut E.	58 56 5	3473	57 37 1	3469	56 18 15	3466	54 59 47	3425
	α Pegasi E.	73 0 25	3268	71 37 20	3262	70 14 20	3266	68 51 25	3272
	Venus E.	109 33 26	3436	108 13 42	3436	106 53 57	3435	105 34 11	3435
22	Spica W.	88 0 32	3078	89 29 9	3074	90 57 50	3070	92 26 36	3067
	Saturn W.	59 45 17	3039	61 14 41	3036	62 44 9	3033	64 13 41	3029
	Antares W.	42 49 29	3190	44 15 50	3181	45 42 22	3171	47 9 6	3163
	Jupiter E.	46 4 1	3108	44 36 1	3105	43 7 57	3101	41 39 49	3098
	Fomalhaut E.	48 33 2	3743	47 17 0	3773	46 1 30	3806	44 46 34	3842
	α Pegasi E.	61 58 22	3400	60 36 6	3408	59 13 58	3415	57 51 59	3423
	Venus E.	98 54 56	3423	97 34 57	3419	96 14 54	3416	94 54 47	3411
	SUN E.	131 22 49	3456	130 1 36	3453	128 40 18	3447	127 18 55	3442
23	Spica W.	99 51 42	3043	101 21 2	3037	102 50 29	3030	104 20 4	3023

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23	Saturn W.	65° 43' 18"	2025	67° 13' 0"	2020	68° 42' 48"	2015	70° 12' 42"	2000
	Antares W.	48 36 0	3133	50 3 6	3134	51 30 22	3135	52 57 49	3126
	Jupiter E.	40 11 36	3094	38 43 19	3090	37 14 57	3085	35 46 30	3081
	Fomalhaut E.	43 32 15	3083	42 18 38	3027	41 5 46	3077	39 53 44	4033
	α Pegasi E.	56 30 8	3431	55 8 27	3441	53 46 57	3432	52 25 39	3463
	Venus E.	93 34 35	3506	92 14 18	3502	90 53 56	3496	89 33 27	3490
	SUN E.	125 57 26	3437	124 35 51	3431	123 14 10	3425	121 52 22	3419
24	Saturn W.	77 44 1	2977	79 14 43	2970	80 45 33	2962	82 16 34	2953
	Antares W.	60 17 51	3079	61 46 26	3069	63 15 14	3059	64 44 14	3049
	Jupiter E.	28 22 35	3032	26 53 27	3047	25 24 10	3039	23 54 46	3033
	α Pegasi E.	45 42 55	3545	44 23 20	3546	43 4 9	3531	41 45 25	3521
	Venus E.	82 49 17	3454	81 28 2	3446	80 6 37	3437	78 45 2	3430
	SUN E.	115 1 26	3381	113 38 48	3372	112 16 0	3364	110 53 2	3354
25	Saturn W.	89 54 31	2965	91 26 44	2964	92 59 11	2953	94 31 52	2970
	Antares W.	72 12 30	2993	73 42 52	2981	75 13 29	2969	76 44 21	2956
	α Pegasi E.	35 21 1	3536	34 6 36	3501	32 53 17	3474	31 41 12	4082
	Venus E.	71 54 19	3372	70 31 31	3362	69 8 31	3350	67 45 17	3337
	SUN E.	103 55 15	3300	102 31 3	3298	101 6 37	3276	99 41 57	3262
26	Saturn W.	102 19 16	2906	103 53 36	2792	105 28 14	2779	107 3 10	2768
	Antares W.	84 22 47	2989	85 55 20	2874	87 28 12	2860	89 1 22	2845
	α Aquilæ W.	41 20 59	3077	42 33 1	3086	43 46 25	3030	45 1 6	2750
	Venus E.	60 45 11	3265	59 20 19	3280	57 55 9	3234	56 29 40	3218
	SUN E.	92 34 37	3192	91 8 18	3176	89 41 40	3161	88 14 44	3145
27	Antares W.	96 52 11	2767	98 27 22	2751	100 2 54	2735	101 38 48	2718
	α Aquilæ W.	51 31 29	3463	52 52 35	3414	54 14 36	3398	55 37 29	3324
	Venus E.	49 17 20	3132	47 49 49	3114	46 21 56	3096	44 53 41	3078
	SUN E.	80 55 6	3060	79 26 7	3042	77 56 47	3024	76 27 4	3006
28	Antares W.	109 43 50	2635	111 21 58	2618	113 0 29	2601	114 39 23	2585
	α Aquilæ W.	62 43 56	3132	64 11 27	3098	65 39 39	3065	67 8 31	3034
	Fomalhaut W.	32 25 4	4065	33 35 40	3919	34 48 41	3798	36 3 56	3672
	Jupiter W.	21 35 47	2617	23 14 19	2596	24 53 20	2676	26 32 49	3554
	Venus E.	37 26 39	2981	35 56 2	2962	34 25 1	2942	32 53 36	2934
	SUN E.	68 52 43	2911	67 20 38	2892	65 48 9	2873	64 15 15	2858
29	α Aquilæ W.	74 42 14	2891	76 14 44	2886	77 47 47	2841	79 21 22	2818
	Fomalhaut W.	42 48 7	3220	44 13 42	3161	45 40 38	3098	47 8 50	3041
	Jupiter W.	34 57 19	2454	36 39 37	2434	38 22 23	2415	40 5 36	2396
	α Pegasi W.	28 38 15	3771	29 53 47	3630	31 12 0	3484	32 32 42	3264
	SUN E.	56 24 28	2756	54 49 3	2737	53 13 12	2718	51 36 56	2699
30	α Aquilæ W.	87 16 35	2713	88 52 58	2695	90 29 44	2678	92 6 53	2662
	Fomalhaut W.	54 46 18	2803	56 20 42	2784	57 55 57	2727	59 32 1	2693
	Jupiter W.	48 48 34	2392	50 34 29	2355	52 20 51	2367	54 7 40	2330
	α Pegasi W.	39 46 18	2934	41 17 54	2871	42 50 50	2814	44 25 0	2792
	SUN E.	43 29 29	2611	41 50 49	2595	40 11 47	2580	38 32 24	2564
31	α Aquilæ W.	100 17 20	2603	101 56 11	2596	103 35 12	2589	105 14 22	2584
	Fomalhaut W.	67 43 4	2549	69 23 11	2534	71 3 51	2502	72 45 2	2490
	α Pegasi W.	52 31 30	2554	54 11 28	2521	55 52 12	2490	57 33 39	2462
	SUN E.	30 10 46	2506	28 29 41	2499	26 48 27	2484	25 7 5	2467

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
23	Saturn W.	71° 42' 43"	3005	73° 12' 50"	2997	74° 43' 6"	2992	76° 13' 25"	2985
	Antares W.	54 25 27	3117	55 53 16	3108	57 21 16	3098	58 49 28	3089
	Jupiter E.	34 17 56	3075	32 49 16	3069	31 20 30	3064	29 51 36	3058
	Fomalhaut E.	38 42 37	4095	37 32 30	4165	36 23 31	4244	35 15 46	4330
	α Pegasi E.	51 4 34	3477	49 43 44	3490	48 23 9	3506	47 2 52	3525
	Venus E.	88 12 52	3484	86 52 10	3477	85 31 20	3469	84 10 23	3463
	SUN E.	120 30 27	3412	119 8 24	3405	117 46 13	3398	116 23 54	3390
24	Saturn W.	83 47 46	2944	85 19 9	2935	86 50 43	2924	88 22 31	2916
	Antares W.	66 13 26	3038	67 42 52	3027	69 12 31	3017	70 42 23	3008
	Jupiter E.	22 25 14	3026	20 55 34	3020	19 25 46	3014	17 55 52	3009
	α Pegasi E.	40 27 13	3053	39 9 36	3059	37 52 37	3130	36 36 22	3182
	Venus E.	77 23 17	3416	76 1 21	3407	74 39 12	3397	73 16 52	3386
	SUN E.	109 29 53	3344	108 6 32	3333	106 42 59	3322	105 19 13	3312
25	Saturn W.	96 4 49	2950	97 38 1	2946	99 11 29	2932	100 45 14	2920
	Antares W.	78 15 29	2943	79 46 53	2930	81 18 34	2916	82 50 32	2903
	α Pegasi E.	30 30 33	4163	29 21 32	4281	28 14 22	4421	27 9 20	4587
	Venus E.	66 21 48	3323	64 58 3	3309	63 34 2	3298	62 9 46	3280
	SUN E.	98 17 1	3249	96 51 50	3235	95 26 22	3221	94 0 38	3207
26	Saturn W.	108 38 26	2748	110 14 2	2733	111 49 58	2718	113 26 14	2701
	Antares W.	90 34 52	2929	92 8 42	2914	93 42 52	2899	95 17 21	2788
	α Aquilæ W.	46 17 0	3095	47 34 2	3024	48 52 10	3067	50 11 20	3114
	Venus E.	55 3 52	3302	53 37 45	3184	52 11 17	3168	50 44 29	3160
	SUN E.	86 47 29	3129	85 19 54	3112	83 51 59	3095	82 23 43	3078
27	Antares W.	103 15 4	2701	104 51 42	2685	106 28 42	2668	108 6 5	2652
	α Aquilæ W.	57 1 13	3292	58 25 45	3242	59 51 4	3204	61 17 8	3168
	Venus E.	43 25 4	3038	41 56 3	3039	40 26 39	3020	38 56 51	3001
	SUN E.	74 56 59	2988	73 26 31	2969	71 55 39	2950	70 24 23	2931
28	Antares W.	116 18 39	2567	117 58 19	2552	119 38 20	2536	121 18 43	2520
	α Aquilæ W.	68 38 2	3003	70 8 11	2973	71 38 57	2946	73 10 18	2918
	Fomalhaut W.	37 21 13	3366	38 40 24	3470	40 1 22	3592	41 23 59	3703
	Jupiter W.	28 12 47	2534	29 53 13	2614	31 34 7	2694	33 15 29	2774
	Venus E.	31 21 47	2903	29 49 32	2864	28 16 53	2855	26 43 49	2844
	SUN E.	62 41 56	2984	61 8 12	2915	59 34 3	2795	57 59 28	2775
29	α Aquilæ W.	80 55 27	2795	82 30 2	2772	84 5 6	2752	85 40 37	2732
	Fomalhaut W.	48 38 12	2986	50 8 42	2966	51 40 15	2959	53 12 48	2945
	Jupiter W.	41 49 18	2876	43 33 26	2867	45 18 2	2859	47 3 4	2851
	α Pegasi W.	33 55 40	3258	35 20 41	3164	36 47 33	3079	38 16 8	3009
	SUN E.	50 0 15	2981	48 23 10	2963	46 45 40	2945	45 7 46	2928
30	α Aquilæ W.	93 44 22	2649	95 22 11	2635	97 0 18	2622	98 38 42	2612
	Fomalhaut W.	61 8 50	2660	62 46 23	2629	64 24 38	2601	66 3 32	2572
	Jupiter W.	55 54 53	2284	57 42 30	2218	59 30 34	2205	61 18 59	2192
	α Pegasi W.	46 0 18	2713	47 36 40	2668	49 14 3	2627	50 52 21	2590
	SUN E.	36 52 40	2651	35 12 37	2638	33 32 16	2625	31 51 38	2616
31	α Aquilæ W.	106 53 39	2581	108 33 0	2560	110 12 23	2551	111 51 44	2555
	Fomalhaut W.	74 26 43	2461	76 8 51	2443	77 51 24	2426	79 34 21	2419
	α Pegasi W.	59 15 45	2486	60 58 28	2412	62 41 46	2380	64 25 35	2371
	SUN E.	23 25 40	2492	21 44 16	2498	20 3 0	2510	18 22 1	2539

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.		added to Apparent Time.	
Sat.	1	^h 4 ^m 35 ^s 28.92	10.228	N. 22° 1' 56.3	20.61	15' 48.29	68.39	^m 2 ^s 30.90	0.372
Sun.	2	4 39 34.63	10.244	22 9 59.7	19.65	15 48.16	68.45	2 21.76	0.388
Mon.	3	4 43 40.73	10.260	22 17 39.9	18.68	15 48.03	68.50	2 12.25	0.404
Tues.	4	4 47 47.19	10.275	22 24 56.8	17.71	15 47.91	68.55	2 2.38	0.418
Wed.	5	4 51 53.99	10.289	22 31 50.2	16.73	15 47.79	68.60	1 52.16	0.432
Thur.	6	4 56 1.13	10.302	22 38 20.0	15.74	15 47.68	68.65	1 41.61	0.445
Fri.	7	5 0 8.57	10.314	22 44 26.0	14.75	15 47.57	68.69	1 30.75	0.457
Sat.	8	5 4 16.29	10.325	22 50 7.9	13.75	15 47.46	68.73	1 19.61	0.468
Sun.	9	5 8 24.28	10.336	22 55 25.8	12.74	15 47.36	68.77	1 8.22	0.479
Mon.	10	5 12 32.51	10.345	23 0 19.6	11.73	15 47.27	68.81	0 56.59	0.488
Tues.	11	5 16 40.94	10.354	23 4 49.1	10.72	15 47.18	68.84	0 44.74	0.497
Wed.	12	5 20 49.56	10.362	23 8 54.2	9.70	15 47.09	68.87	0 32.70	0.505
Thur.	13	5 24 58.36	10.369	23 12 34.8	8.68	15 47.01	68.89	0 20.49	0.512
Fri.	14	5 29 7.32	10.375	23 15 50.8	7.66	15 46.93	68.91	0 8.12	0.518
Sat.	15	5 33 16.42	10.380	23 18 42.3	6.63	15 46.85	68.93	0 4.39	0.524
Sun.	16	5 37 25.65	10.384	23 21 9.1	5.60	15 46.77	68.95	0 17.02	0.528
Mon.	17	5 41 34.97	10.388	23 23 11.2	4.57	15 46.70	68.96	0 29.75	0.532
Tues.	18	5 45 44.36	10.391	23 24 48.5	3.54	15 46.63	68.97	0 42.55	0.535
Wed.	19	5 49 53.81	10.393	23 26 1.0	2.50	15 46.57	68.98	0 55.41	0.537
Thur.	20	5 54 3.32	10.394	23 26 48.7	1.47	15 46.51	68.98	1 8.32	0.538
Fri.	21	5 58 12.83	10.395	23 27 11.7	0.43	15 46.45	68.98	1 21.25	0.539
Sat.	22	6 2 22.34	10.395	23 27 9.9	0.60	15 46.39	68.98	1 34.18	0.538
Sun.	23	6 6 31.85	10.394	23 26 43.1	1.63	15 46.34	68.97	1 47.09	0.537
Mon.	24	6 10 41.30	10.392	23 25 51.6	2.66	15 46.29	68.96	1 59.96	0.534
Tues.	25	6 14 50.69	10.388	23 24 35.5	3.69	15 46.25	68.94	2 12.75	0.531
Wed.	26	6 19 0.00	10.384	23 22 54.7	4.72	15 46.21	68.92	2 25.45	0.526
Thur.	27	6 23 9.18	10.378	23 20 49.2	5.74	15 46.18	68.90	2 38.04	0.521
Fri.	28	6 27 18.21	10.372	23 18 19.0	6.77	15 46.15	68.88	2 50.48	0.515
Sat.	29	6 31 27.08	10.364	23 15 24.3	7.79	15 46.13	68.85	3 2.76	0.508
Sun.	30	6 35 35.77	10.356	23 12 5.1	8.81	15 46.12	68.82	3 14.86	0.499
Mon.	31	6 39 44.23	10.346	N. 23 8 21.5	9.82	15 46.11	68.79	3 26.74	0.489

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0a.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.		
Sat.	1	^h 4 ^m 35 ^s 29.35	10.223	N. 22° 1' 57.3"	20.61	^m 2 ^s 30.88	^s 0.372	^h 4 ^m 38 ^s 0.23
Sun.	2	4 39 35.04	10.244	22 10 0.6	19.65	2 21.74	0.388	4 41 56.78
Mon.	3	4 43 41.11	10.260	22 17 40.7	18.68	2 12.23	0.404	4 45 53.34
Tues.	4	4 47 47.54	10.275	22 24 57.4	17.71	2 2.36	0.418	4 49 49.90
Wed.	5	4 51 54.31	10.289	22 31 50.7	16.73	1 52.14	0.432	4 53 46.45
Thur.	6	4 56 1.42	10.303	22 38 20.4	15.74	1 41.59	0.445	4 57 43.01
Fri.	7	5 0 8.83	10.314	22 44 26.3	14.75	1 30.74	0.457	5 1 39.57
Sat.	8	5 4 16.52	10.325	22 50 8.2	13.75	1 19.60	0.468	5 5 36.12
Sun.	9	5 8 24.47	10.336	22 55 26.0	12.74	1 8.21	0.479	5 9 32.68
Mon.	10	5 12 32.66	10.345	23 0 19.8	11.73	0 56.58	0.488	5 13 29.24
Tues.	11	5 16 41.06	10.354	23 4 49.3	10.72	0 44.73	0.497	5 17 25.79
Wed.	12	5 20 49.65	10.362	23 8 54.3	9.70	0 32.70	0.505	5 21 22.35
Thur.	13	5 24 58.42	10.369	23 12 34.8	8.68	0 20.49	0.512	5 25 18.91
Fri.	14	5 29 7.35	10.375	23 15 50.8	7.66	0 8.11	0.518	5 29 15.46
Sat.	15	5 33 16.41	10.380	23 18 42.3	6.63	0 4.39	0.524	5 33 12.02
Sun.	16	5 37 25.60	10.384	23 21 9.1	5.60	0 17.02	0.528	5 37 8.58
Mon.	17	5 41 34.88	10.388	23 23 11.2	4.57	0 29.75	0.532	5 41 5.13
Tues.	18	5 45 44.23	10.391	23 24 48.5	3.54	0 42.54	0.535	5 45 1.69
Wed.	19	5 49 53.65	10.393	23 26 1.0	2.50	0 55.40	0.537	5 48 58.25
Thur.	20	5 54 3.12	10.394	23 26 48.7	1.47	1 8.32	0.538	5 52 54.80
Fri.	21	5 58 12.60	10.395	23 27 11.7	0.43	1 21.24	0.539	5 56 51.36
Sat.	22	6 2 22.08	10.395	23 27 9.9	0.60	1 34.16	0.538	6 0 47.92
Sun.	23	6 6 31.54	10.394	23 26 43.2	1.63	1 47.07	0.537	6 4 44.47
Mon.	24	6 10 40.97	10.392	23 25 51.8	2.66	1 59.94	0.534	6 8 41.03
Tues.	25	6 14 50.31	10.388	23 24 35.7	3.69	2 12.72	0.531	6 12 37.59
Wed.	26	6 18 59.58	10.384	23 22 54.9	4.72	2 25.43	0.526	6 16 34.15
Thur.	27	6 23 8.72	10.378	23 20 49.4	5.74	2 38.02	0.521	6 20 30.70
Fri.	28	6 27 17.72	10.372	23 18 19.3	6.77	2 50.46	0.515	6 24 27.26
Sat.	29	6 31 26.56	10.364	23 15 24.6	7.79	3 2.74	0.508	6 28 23.82
Sun.	30	6 35 35.21	10.356	23 12 5.5	8.81	3 14.84	0.499	6 32 20.37
Mon.	31	6 39 43.63	10.346	N. 23° 8' 22.0"	9.82	3 26.70	0.489	6 36 16.93

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.	
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.					
		λ	λ'							
1	152	70° 29' 10.3	28' 53.5	143.70	—0.32	.0062317	26.2	19 18 49.40		
2	153	71 26 38.8	26 21.9	143.66	0.35	.0062933	25.2	19 14 53.49		
3	154	72 24 6.3	23 49.2	143.63	0.35	.0063524	24.1	19 10 57.58		
4	155	73 21 32.8	21 15.5	143.59	0.31	.0064091	23.1	19 7 1.68		
5	156	74 18 58.3	18 40.9	143.54	0.25	.0064634	22.1	19 3 5.77		
6	157	75 16 22.7	16 5.2	143.50	0.16	.0065154	21.1	18 59 9.86		
7	158	76 13 46.1	13 28.4	143.45	—0.06	.0065652	20.2	18 55 13.95		
8	159	77 11 8.4	10 50.5	143.41	+0.06	.0066129	19.4	18 51 18.03		
9	160	78 8 29.8	8 11.7	143.37	0.19	.0066585	18.6	18 47 22.12		
10	161	79 5 50.2	5 32.0	143.32	0.33	.0067022	17.8	18 43 26.21		
11	162	80 3 9.5	2 51.2	143.28	0.46	.0067440	17.1	18 39 30.30		
12	163	81 0 27.8	0 9.3	143.24	0.57	.0067840	16.4	18 35 34.39		
13	164	81 57 45.2	57 26.5	143.21	0.67	.0068224	15.7	18 31 38.47		
14	165	82 55 1.7	54 42.8	143.18	0.75	.0068592	15.1	18 27 42.56		
15	166	83 52 17.5	51 58.5	143.15	0.80	.0068946	14.5	18 23 46.65		
16	167	84 49 32.7	49 13.5	143.12	0.81	.0069287	13.9	18 19 50.75		
17	168	85 46 47.4	46 28.0	143.10	0.80	.0069614	13.3	18 15 54.84		
18	169	86 44 1.6	43 42.0	143.08	0.76	.0069927	12.7	18 11 58.93		
19	170	87 41 15.4	40 55.6	143.07	0.69	.0070225	12.1	18 8 3.02		
20	171	88 38 28.9	38 9.0	143.06	0.59	.0070508	11.5	18 4 7.10		
21	172	89 35 42.1	35 22.1	143.05	0.49	.0070777	10.8	18 0 11.19		
22	173	90 32 55.1	32 34.9	143.04	0.36	.0071029	10.1	17 56 15.27		
23	174	91 30 8.1	29 47.7	143.04	0.23	.0071263	9.3	17 52 19.36		
24	175	92 27 21.1	27 0.5	143.04	+0.09	.0071476	8.5	17 48 23.46		
25	176	93 24 34.1	24 13.4	143.04	—0.04	.0071673	7.6	17 44 27.55		
26	177	94 21 47.1	21 26.3	143.04	0.15	.0071847	6.7	17 40 31.64		
27	178	95 19 0.1	18 39.0	143.04	0.25	.0071998	5.7	17 36 35.73		
28	179	96 16 13.1	15 51.9	143.04	0.31	.0072125	4.7	17 32 39.81		
29	180	97 13 26.2	13 4.8	143.04	0.35	.0072226	3.7	17 28 43.90		
30	181	98 10 39.2	10 17.7	143.04	0.36	.0072302	2.6	17 24 47.99		
31	182	99 7 52.3	7 30.7	143.04	—0.33	.0072352	1.5	17 20 52.07		

Note: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							^h ^m	^m	
1	16 35.6	16 39.0	60 47.5	+1.34	61 1.6	+0.99	23 52.3	2.56	28.2
2	16 42.1	16 43.4	61 11.2	+0.60	61 16.0	+0.20	6		29.2
3	16 43.4	16 42.0	61 16.0	-0.20	61 11.2	-0.60	0 54.5	2.61	0.9
4	16 39.5	16 35.8	61 1.7	0.06	60 48.1	1.29	1 57.1	2.58	1.9
5	16 31.1	16 25.5	60 30.8	1.57	60 10.4	1.80	2 58.0	2.48	2.9
6	16 19.3	16 12.6	59 47.5	1.98	59 22.9	2.10	3 55.8	2.34	3.9
7	16 5.6	15 58.4	58 57.1	2.17	58 30.7	2.20	4 50.2	2.19	4.9
8	15 51.2	15 44.2	58 4.4	2.18	57 38.5	2.12	5 41.3	2.07	5.9
9	15 37.4	15 30.8	57 13.5	2.04	56 49.6	1.93	6 29.6	1.97	6.9
10	15 24.7	15 19.0	56 27.1	1.82	56 6.0	1.69	7 16.1	1.91	7.9
11	15 13.7	15 8.8	55 46.6	1.55	55 28.8	1.41	8 1.5	1.88	8.9
12	15 4.5	15 0.5	55 12.7	1.27	54 58.2	1.13	8 46.6	1.88	9.9
13	14 57.1	14 54.0	54 45.5	0.99	54 34.4	0.86	9 31.9	1.90	10.9
14	14 51.4	14 49.2	54 24.8	0.73	54 16.8	0.61	10 17.8	1.92	11.9
15	14 47.4	14 46.0	54 10.2	0.49	54 5.0	0.37	11 4.3	1.95	12.9
16	14 45.0	14 44.3	54 1.2	0.26	53 58.7	-0.15	11 51.5	1.97	13.9
17	14 44.0	14 44.0	53 57.6	-0.04	53 57.7	+0.07	12 39.0	1.98	14.9
18	14 44.4	14 45.2	53 59.2	+0.18	54 2.1	0.20	13 26.4	1.97	15.9
19	14 46.4	14 48.0	54 6.5	0.43	54 12.4	0.56	14 13.4	1.95	16.9
20	14 50.1	14 52.6	54 20.0	0.70	54 29.2	0.84	14 59.8	1.92	17.9
21	14 55.6	14 59.1	54 40.2	0.99	54 53.1	1.15	15 45.6	1.90	18.9
22	15 3.1	15 7.6	55 7.8	1.31	55 24.4	1.46	16 31.1	1.90	19.9
23	15 12.7	15 18.2	55 42.9	1.61	56 3.2	1.77	17 16.8	1.92	20.9
24	15 24.2	15 30.7	56 25.3	1.91	56 49.0	2.04	18 3.3	1.97	21.9
25	15 37.5	15 44.7	57 14.2	2.15	57 40.5	2.23	18 51.4	2.05	22.9
26	15 52.1	15 59.6	58 7.7	2.28	58 35.2	2.29	19 42.0	2.17	23.9
27	16 7.1	16 14.4	59 2.7	2.26	59 29.5	2.17	20 35.8	2.31	24.9
28	16 21.3	16 27.6	59 54.9	2.03	60 18.2	1.83	21 33.2	2.46	25.9
29	16 33.3	16 37.9	60 38.8	1.57	60 56.0	1.26	22 33.8	2.58	26.9
30	16 41.5	16 43.9	61 9.1	0.91	61 17.8	+0.52	23 36.4	2.63	27.9
31	16 44.9	16 44.6	61 21.7	+0.12	61 20.6	-0.30	6		28.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 1.					MONDAY 3.				
0	3 32 41.75	2.6228	N.14° 29' 10.1	7.585	0	5 38 8.80	2.6084	N.18° 21' 58.7	1.782
1	3 35 13.33	2.6287	14 36 42.4	7.490	1	5 40 48.91	2.6088	18 23 39.6	1.612
2	3 37 45.19	2.6334	14 44 8.9	7.393	2	5 43 29.05	2.6091	18 25 12.1	1.473
3	3 40 17.33	2.6381	14 51 29.6	7.295	3	5 46 9.20	2.6093	18 26 36.3	1.333
4	3 42 49.76	2.6428	14 58 44.3	7.196	4	5 48 49.37	2.6094	18 27 52.1	1.188
5	3 45 22.47	2.6474	15 5 53.0	7.094	5	5 51 29.54	2.6094	18 28 59.5	1.053
6	3 47 55.45	2.6519	15 12 55.6	6.992	6	5 54 9.70	2.6092	18 29 58.4	0.913
7	3 50 28.70	2.6564	15 19 52.0	6.888	7	5 56 49.85	2.6089	18 30 49.0	0.773
8	3 53 2.22	2.6609	15 26 42.2	6.783	8	5 59 29.97	2.6085	18 31 31.1	0.633
9	3 55 36.00	2.6653	15 33 26.0	6.677	9	6 2 10.07	2.6080	18 32 4.8	0.493
10	3 58 10.05	2.6696	15 40 3.5	6.570	10	6 4 50.13	2.6074	18 32 30.1	0.352
11	4 0 44.35	2.6738	15 46 34.5	6.463	11	6 7 30.15	2.6067	18 32 47.0	0.212
12	4 3 18.91	2.6780	15 52 58.9	6.353	12	6 10 10.13	2.6058	18 32 55.5	0.073
13	4 5 53.72	2.6822	15 59 16.6	6.240	13	6 12 50.05	2.6048	18 32 55.6	0.006
14	4 8 28.77	2.6863	16 5 27.7	6.128	14	6 15 29.90	2.6037	18 32 47.3	0.706
15	4 11 4.07	2.6903	16 11 32.0	6.015	15	6 18 9.68	2.6024	18 32 30.6	0.346
16	4 13 39.60	2.6942	16 17 29.5	5.900	16	6 20 49.39	2.6010	18 32 5.6	0.487
17	4 16 15.37	2.6980	16 23 20.0	5.784	17	6 23 29.01	2.6005	18 31 32.3	0.026
18	4 18 51.36	2.6017	16 29 3.6	5.667	18	6 26 8.53	2.6079	18 30 50.6	0.765
19	4 21 27.57	2.6053	16 34 40.1	5.549	19	6 28 47.96	2.6063	18 30 0.6	0.906
20	4 24 4.00	2.6089	16 40 9.5	5.430	20	6 31 27.28	2.6044	18 29 2.3	1.041
21	4 26 40.64	2.6124	16 45 31.7	5.310	21	6 34 6.49	2.6024	18 27 55.8	1.178
22	4 29 17.49	2.6158	16 50 46.7	5.189	22	6 36 45.57	2.6003	18 26 41.0	1.316
23	4 31 54.54	2.6192	N.16 55 54.3	5.066	23	6 39 24.53	2.6182	N.18 25 18.0	1.451
SUNDAY 2.					TUESDAY 4.				
0	4 34 31.79	2.6224	N.17 0 54.6	4.942	0	6 42 3.35	2.6450	N.18 23 46.9	1.867
1	4 37 9.23	2.6265	17 5 47.4	4.818	1	6 44 42.02	2.6433	18 22 7.6	1.732
2	4 39 46.85	2.6305	17 10 32.7	4.693	2	6 47 20.55	2.6408	18 20 20.2	1.596
3	4 42 24.65	2.6345	17 15 10.5	4.567	3	6 49 58.93	2.6383	18 18 24.7	1.460
4	4 45 2.63	2.6383	17 19 40.7	4.440	4	6 52 37.14	2.6356	18 16 21.1	1.326
5	4 47 40.77	2.6370	17 24 3.2	4.311	5	6 55 15.19	2.6327	18 14 9.6	1.200
6	4 50 19.07	2.6397	17 28 18.0	4.182	6	6 57 53.06	2.6297	18 11 50.0	1.072
7	4 52 57.53	2.6423	17 32 25.1	4.053	7	7 0 30.75	2.6267	18 9 22.5	0.935
8	4 55 36.15	2.6447	17 36 24.4	3.923	8	7 3 8.26	2.6235	18 6 47.0	0.807
9	4 58 14.91	2.6471	17 40 15.8	3.791	9	7 5 45.57	2.6203	18 4 3.7	0.677
10	5 0 53.80	2.6493	17 43 59.3	3.659	10	7 8 22.69	2.6170	18 1 12.6	0.546
11	5 3 32.82	2.6513	17 47 34.9	3.527	11	7 10 59.60	2.6135	17 58 13.8	0.414
12	5 6 11.96	2.6533	17 51 2.5	3.393	12	7 13 36.31	2.6099	17 55 7.3	0.272
13	5 8 51.22	2.6553	17 54 22.1	3.259	13	7 16 12.80	2.6063	17 51 53.1	0.130
14	5 11 30.59	2.6571	17 57 33.6	3.125	14	7 18 49.07	2.6026	17 48 31.3	0.437
15	5 14 10.06	2.6587	18 0 37.1	2.990	15	7 21 25.12	2.5989	17 45 2.0	0.593
16	5 16 49.63	2.6602	18 3 32.4	2.854	16	7 24 0.93	2.5950	17 41 25.1	0.677
17	5 19 29.29	2.6617	18 6 19.6	2.718	17	7 26 36.51	2.5910	17 37 40.7	0.801
18	5 22 9.03	2.6630	18 8 58.5	2.581	18	7 29 11.85	2.5869	17 33 49.0	0.923
19	5 24 48.85	2.6643	18 11 29.2	2.443	19	7 31 46.94	2.5828	17 29 50.0	0.994
20	5 27 28.73	2.6653	18 13 51.7	2.306	20	7 34 21.78	2.5786	17 25 43.7	0.165
21	5 30 8.67	2.6662	18 16 5.9	2.168	21	7 36 56.36	2.5743	17 21 30.1	0.206
22	5 32 48.67	2.6670	18 18 11.8	2.030	22	7 39 30.69	2.5699	17 17 9.4	0.408
23	5 35 28.72	2.6678	18 20 9.4	1.891	23	7 42 4.75	2.5655	17 12 41.6	0.422
24	5 38 8.80	2.6684	N.18 21 58.7	1.752	24	7 44 38.55	2.5610	N.17 8 6.9	0.436

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 5.					FRIDAY 7.				
0	7 44 36.55	2.6610	N.17° 8' 6.9	4.638	0	9 41 35.32	2.3004	N.11° 33' 38.0	8.816
1	7 47 12.07	2.6664	17 3 25.1	4.754	1	9 43 53.49	2.3000	11 24 47.3	8.878
2	7 49 45.32	2.6618	16 58 36.4	4.890	2	9 46 11.33	2.3047	11 15 53.3	8.928
3	7 52 18.29	2.6471	16 53 40.9	4.983	3	9 48 28.85	2.3094	11 6 56.0	8.981
4	7 54 50.97	2.6423	16 48 38.6	5.094	4	9 50 46.06	2.3041	10 57 55.6	9.038
5	7 57 23.36	2.6376	16 43 29.6	5.205	5	9 53 2.95	2.3788	10 48 52.0	9.086
6	7 59 55.47	2.6327	16 38 13.9	5.316	6	9 55 19.52	2.3736	10 39 45.4	9.136
7	8 2 27.28	2.6278	16 32 51.7	5.424	7	9 57 35.79	2.3683	10 30 35.8	9.184
8	8 4 58.80	2.6229	16 27 23.0	5.533	8	9 59 51.74	2.3632	10 21 23.3	9.233
9	8 7 30.02	2.6178	16 21 47.8	5.639	9	10 2 7.38	2.3583	10 12 8.0	9.278
10	8 10 0.93	2.6127	16 16 6.3	5.746	10	10 4 22.72	2.3531	10 2 49.9	9.328
11	8 12 31.53	2.6075	16 10 18.5	5.849	11	10 6 37.76	2.3481	9 53 29.1	9.366
12	8 15 1.83	2.6024	16 4 24.4	5.952	12	10 8 52.49	2.3431	9 44 5.7	9.411
13	8 17 31.82	2.6072	15 58 24.2	6.053	13	10 11 6.92	2.3381	9 34 39.7	9.458
14	8 20 1.49	2.6020	15 52 18.0	6.158	14	10 13 21.06	2.3332	9 25 11.3	9.494
15	8 22 30.85	2.6067	15 46 5.8	6.253	15	10 15 34.90	2.3283	9 15 40.4	9.534
16	8 24 59.89	2.6014	15 39 47.6	6.351	16	10 17 48.45	2.3234	9 6 7.2	9.573
17	8 27 28.61	2.6760	15 33 23.6	6.447	17	10 20 1.70	2.3185	8 56 31.7	9.610
18	8 29 57.01	2.6707	15 26 53.9	6.543	18	10 22 14.67	2.3137	8 46 54.0	9.647
19	8 32 25.09	2.6653	15 20 18.5	6.639	19	10 24 27.35	2.3089	8 37 14.1	9.683
20	8 34 52.84	2.6600	15 13 37.4	6.731	20	10 26 39.75	2.3043	8 27 32.1	9.717
21	8 37 20.26	2.6543	15 6 50.8	6.823	21	10 28 51.87	2.3007	8 17 48.1	9.750
22	8 39 47.36	2.6489	14 59 58.7	6.918	22	10 31 3.71	2.2960	8 8 2.1	9.783
23	8 42 14.13	2.6434	N.14 53 1.3	7.002	23	10 33 15.27	2.2904	N. 7 58 14.2	9.818
THURSDAY 6.					SATURDAY 8.				
0	8 44 40.57	2.6379	N.14 45 58.5	7.090	0	10 35 26.56	2.2859	N. 7 48 24.5	9.843
1	8 47 6.68	2.6323	14 38 50.5	7.176	1	10 37 37.58	2.2814	7 38 33.0	9.878
2	8 49 32.45	2.6269	14 31 37.4	7.261	2	10 39 48.33	2.2770	7 28 39.8	9.901
3	8 51 57.90	2.6213	14 24 19.2	7.346	3	10 41 58.82	2.2727	7 18 45.0	9.927
4	8 54 23.01	2.6158	14 16 55.9	7.429	4	10 44 9.05	2.2683	7 8 48.6	9.953
5	8 56 47.79	2.6102	14 9 27.7	7.510	5	10 46 19.02	2.2640	6 58 50.7	9.978
6	8 59 12.23	2.6047	14 1 54.7	7.590	6	10 48 28.73	2.2596	6 48 51.3	10.001
7	9 1 36.34	2.5991	13 54 16.9	7.669	7	10 50 38.19	2.2556	6 38 50.6	10.028
8	9 4 0.12	2.5935	13 46 34.4	7.747	8	10 52 47.40	2.2512	6 28 48.5	10.046
9	9 6 23.56	2.5879	13 38 47.3	7.823	9	10 54 56.36	2.2473	6 18 45.2	10.066
10	9 8 46.67	2.5824	13 30 55.6	7.898	10	10 57 5.08	2.2433	6 8 40.6	10.086
11	9 11 9.44	2.5768	13 22 59.5	7.972	11	10 59 13.55	2.2393	5 58 34.9	10.105
12	9 13 31.88	2.5712	13 14 59.0	8.046	12	11 1 21.79	2.2353	5 48 28.0	10.123
13	9 15 53.98	2.5656	13 6 54.2	8.116	13	11 3 29.79	2.2314	5 38 20.1	10.140
14	9 18 15.75	2.5601	12 58 45.1	8.186	14	11 5 37.56	2.2276	5 28 11.2	10.156
15	9 20 37.19	2.5546	12 50 31.9	8.254	15	11 7 45.10	2.2238	5 18 1.3	10.172
16	9 22 58.30	2.5491	12 42 14.6	8.321	16	11 9 52.42	2.2201	5 7 50.6	10.188
17	9 25 19.08	2.5435	12 33 53.3	8.388	17	11 11 59.52	2.2164	4 57 39.0	10.199
18	9 27 39.52	2.5380	12 25 28.0	8.453	18	11 14 6.39	2.2128	4 47 26.7	10.211
19	9 29 59.64	2.5326	12 16 58.9	8.517	19	11 16 13.05	2.2092	4 37 13.6	10.223
20	9 32 19.43	2.5271	12 8 26.0	8.580	20	11 18 19.49	2.2057	4 26 59.9	10.234
21	9 34 38.89	2.5216	11 59 49.4	8.641	21	11 20 25.72	2.2022	4 16 45.5	10.244
22	9 36 58.02	2.5162	11 51 9.1	8.701	22	11 22 31.75	2.0988	4 6 30.6	10.253
23	9 39 16.83	2.5108	11 42 25.3	8.759	23	11 24 37.57	2.0953	3 56 15.2	10.261
24	9 41 35.32	2.5054	N.11 33 38.0	8.816	24	11 26 43.19	2.0920	N. 3 45 59.3	10.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 9.					TUESDAY 11.				
0	11 26 43.19	2.0920	N. 3 45 59.3	10.208	0	13 4 18.38	1.9986	S. 4 20 7.7	9.712
1	11 28 48.61	2.0888	3 35 43.0	10.274	1	13 6 17.97	1.9928	4 29 49.6	9.804
2	11 30 53.84	2.0856	3 25 26.4	10.279	2	13 8 17.51	1.9920	4 39 29.8	9.866
3	11 32 58.88	2.0824	3 15 9.5	10.283	3	13 10 17.00	1.9912	4 49 8.3	9.827
4	11 35 3.73	2.0793	3 4 52.4	10.287	4	13 12 16.45	1.9904	4 58 45.0	9.897
5	11 37 8.40	2.0763	2 54 35.1	10.290	5	13 14 15.86	1.9898	5 8 19.9	9.868
6	11 39 12.88	2.0733	2 44 17.6	10.292	6	13 16 15.23	1.9892	5 17 52.9	9.835
7	11 41 17.18	2.0703	2 34 0.0	10.293	7	13 18 14.56	1.9886	5 27 24.1	9.808
8	11 43 21.31	2.0674	2 23 42.4	10.293	8	13 20 13.86	1.9880	5 36 53.3	9.771
9	11 45 25.27	2.0646	2 13 24.8	10.293	9	13 22 13.12	1.9875	5 46 20.6	9.738
10	11 47 29.05	2.0617	2 3 7.2	10.292	10	13 24 12.26	1.9871	5 55 45.9	9.705
11	11 49 32.67	2.0589	1 52 49.7	10.290	11	13 26 11.57	1.9867	6 5 9.2	9.671
12	11 51 36.12	2.0563	1 42 32.4	10.288	12	13 28 10.76	1.9863	6 14 30.4	9.638
13	11 53 39.42	2.0537	1 32 15.2	10.284	13	13 30 9.93	1.9860	6 23 49.5	9.601
14	11 55 42.56	2.0511	1 21 58.3	10.279	14	13 32 9.07	1.9856	6 33 6.5	9.565
15	11 57 45.55	2.0485	1 11 41.7	10.274	15	13 34 8.20	1.9853	6 42 21.3	9.529
16	11 59 48.38	2.0461	1 1 25.4	10.268	16	13 36 7.31	1.9851	6 51 34.0	9.493
17	12 1 51.07	2.0437	0 51 9.4	10.263	17	13 38 6.41	1.9849	7 0 44.4	9.458
18	12 3 53.62	2.0413	0 40 53.9	10.256	18	13 40 5.50	1.9848	7 9 52.5	9.416
19	12 5 56.02	2.0389	0 30 38.9	10.247	19	13 42 4.58	1.9847	7 18 58.4	9.378
20	12 7 58.29	2.0367	0 20 24.3	10.238	20	13 44 3.66	1.9846	7 28 1.9	9.339
21	12 10 0.43	2.0345	N. 0 10 10.3	10.229	21	13 46 2.73	1.9845	7 37 3.1	9.299
22	12 12 2.43	2.0323	S. 0 0 3.2	10.219	22	13 48 1.80	1.9845	7 46 1.8	9.260
23	12 14 4.30	2.0302	S. 0 10 16.0	10.208	23	13 50 0.87	1.9846	S. 7 54 58.1	9.218
MONDAY 10.					WEDNESDAY 12.				
0	12 16 6.05	2.0282	S. 0 20 28.1	10.196	0	13 51 59.95	1.9847	S. 8 3 51.9	9.876
1	12 18 7.68	2.0262	0 30 39.5	10.188	1	13 53 59.03	1.9848	8 12 43.2	9.833
2	12 20 9.19	2.0242	0 40 50.1	10.170	2	13 55 58.12	1.9849	8 21 31.9	9.791
3	12 22 10.59	2.0223	0 50 59.9	10.157	3	13 57 57.21	1.9850	8 30 18.1	9.748
4	12 24 11.87	2.0205	1 1 8.9	10.143	4	13 59 56.32	1.9852	8 39 1.7	9.705
5	12 26 13.04	2.0187	1 11 17.0	10.127	5	14 1 55.44	1.9855	8 47 42.7	9.661
6	12 28 14.11	2.0169	1 21 24.1	10.111	6	14 3 54.58	1.9857	8 56 21.0	9.617
7	12 30 15.07	2.0152	1 31 30.3	10.094	7	14 5 53.73	1.9860	9 4 56.7	9.573
8	12 32 15.93	2.0135	1 41 35.4	10.077	8	14 7 52.90	1.9864	9 13 29.6	9.528
9	12 34 16.69	2.0119	1 51 39.5	10.060	9	14 9 52.09	1.9868	9 21 59.8	9.479
10	12 36 17.36	2.0103	2 1 42.5	10.041	10	14 11 51.31	1.9871	9 30 27.2	9.433
11	12 38 17.93	2.0088	2 11 44.4	10.022	11	14 13 50.55	1.9875	9 38 51.8	9.388
12	12 40 18.42	2.0074	2 21 45.1	10.002	12	14 15 49.81	1.9879	9 47 13.6	9.343
13	12 42 18.82	2.0060	2 31 44.6	9.981	13	14 17 49.10	1.9884	9 55 32.4	9.299
14	12 44 19.14	2.0046	2 41 42.8	9.960	14	14 19 48.42	1.9889	10 3 48.3	9.241
15	12 46 19.38	2.0033	2 51 39.8	9.938	15	14 21 47.77	1.9894	10 12 1.3	9.192
16	12 48 19.54	2.0020	3 1 35.4	9.916	16	14 23 47.15	1.9900	10 20 11.3	9.143
17	12 50 19.63	2.0008	3 11 29.6	9.892	17	14 25 46.57	1.9906	10 28 18.3	9.091
18	12 52 19.64	1.9997	3 21 22.4	9.868	18	14 27 46.02	1.9912	10 36 22.2	9.040
19	12 54 19.59	1.9986	3 31 13.8	9.844	19	14 29 45.51	1.9918	10 44 23.1	8.990
20	12 56 19.47	1.9976	3 41 3.7	9.819	20	14 31 45.03	1.9925	10 52 20.9	8.937
21	12 58 19.20	1.9964	3 50 52.1	9.793	21	14 33 44.60	1.9932	11 0 15.5	8.884
22	13 0 19.04	1.9954	4 0 38.9	9.767	22	14 35 44.21	1.9939	11 8 7.0	8.831
23	13 2 18.74	1.9945	4 10 24.1	9.740	23	14 37 43.86	1.9946	11 15 55.3	8.777
24	13 4 18.38	1.9936	S. 4 20 7.7	9.712	24	14 39 43.56	1.9953	S. 11 23 40.3	8.723

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 13.					SATURDAY 15.				
0	14 ^h 39 ^m 43.56 ^s	1.9963	S. 11° 23' 40.3"	7.723	0	16 ^h 16 ^m 38.19 ^s	2.0453	S. 16° 23' 23.5"	4.506
1	14 41 43.30	1.9961	11 31 22.1	7.669	1	16 18 40.93	2.0463	16 27 57.1	4.523
2	14 43 43.09	1.9960	11 39 0.6	7.614	2	16 20 43.74	2.0473	16 32 26.2	4.548
3	14 45 42.93	1.9978	11 46 35.8	7.560	3	16 22 46.61	2.0484	16 36 50.8	4.579
4	14 47 42.82	1.9986	-11 54 7.7	7.503	4	16 24 49.55	2.0494	16 41 10.8	4.596
5	14 49 42.76	1.9994	12 1 36.2	7.447	5	16 26 52.55	2.0506	16 45 26.3	4.619
6	14 51 42.75	2.0002	12 9 1.4	7.390	6	16 28 55.61	2.0516	16 49 37.1	4.643
7	14 53 42.79	2.0011	12 16 23.1	7.333	7	16 30 58.73	2.0526	16 53 43.3	4.666
8	14 55 42.88	2.0020	12 23 41.3	7.276	8	16 33 1.92	2.0536	16 57 44.9	4.688
9	14 57 43.03	2.0029	12 30 56.1	7.217	9	16 35 5.16	2.0546	17 1 41.9	4.911
10	14 59 43.23	2.0038	12 38 7.3	7.160	10	16 37 8.47	2.0556	17 5 34.2	4.933
11	15 1 43.49	2.0048	12 45 15.0	7.099	11	16 39 11.83	2.0566	17 9 21.8	4.764
12	15 3 43.81	2.0058	12 52 19.2	7.039	12	16 41 15.26	2.0576	17 13 4.7	4.676
13	15 5 44.19	2.0068	12 59 19.8	6.979	13	16 43 18.75	2.0586	17 16 42.9	4.597
14	15 7 44.62	2.0078	13 6 16.8	6.918	14	16 45 22.29	2.0596	17 20 16.4	4.618
15	15 9 45.11	2.0088	13 13 10.0	6.857	15	16 47 25.89	2.0604	17 23 45.1	4.438
16	15 11 45.67	2.0098	13 19 59.6	6.796	16	16 49 29.54	2.0614	17 27 9.0	4.359
17	15 13 46.29	2.0108	13 26 45.5	6.733	17	16 51 33.25	2.0623	17 30 28.1	4.279
18	15 15 46.97	2.0118	13 33 27.6	6.671	18	16 53 37.01	2.0632	17 33 42.5	4.199
19	15 17 47.71	2.0129	13 40 6.0	6.608	19	16 55 40.82	2.0640	17 36 52.1	4.119
20	15 19 48.52	2.0139	13 46 40.5	6.544	20	16 57 44.69	2.0649	17 39 56.8	4.039
21	15 21 49.39	2.0149	13 53 11.2	6.480	21	16 59 48.61	2.0657	17 42 56.7	3.956
22	15 23 50.32	2.0161	13 59 38.1	6.416	22	17 1 52.57	2.0666	17 45 51.7	3.877
23	15 25 51.32	2.0173	S. 14° 6' 1.1"	6.351	23	17 3 56.58	2.0675	S. 17° 48' 41.7"	3.796
FRIDAY 14.					SUNDAY 16.				
0	15 27 52.39	2.0183	S. 14° 12' 20.1"	6.286	0	17 6 0.63	2.0680	S. 17° 51' 27.0"	3.714
1	15 29 53.52	2.0194	14 18 35.3	6.220	1	17 8 4.73	2.0687	17 54 7.4	3.633
2	15 31 54.72	2.0206	14 24 46.5	6.154	2	17 10 8.87	2.0694	17 56 42.8	3.550
3	15 33 55.99	2.0217	14 30 53.8	6.088	3	17 12 13.05	2.0701	17 59 13.3	3.467
4	15 35 57.32	2.0227	14 36 57.0	6.021	4	17 14 17.28	2.0706	18 1 38.8	3.386
5	15 37 58.72	2.0236	14 42 56.2	5.953	5	17 16 21.55	2.0714	18 3 59.4	3.303
6	15 40 0.18	2.0246	14 48 51.4	5.886	6	17 18 25.85	2.0721	18 6 15.0	3.220
7	15 42 1.72	2.0253	14 54 42.5	5.817	7	17 20 30.19	2.0727	18 8 25.7	3.137
8	15 44 3.32	2.0273	15 0 29.5	5.748	8	17 22 34.57	2.0733	18 10 31.4	3.054
9	15 46 4.99	2.0284	15 6 12.3	5.679	9	17 24 38.98	2.0738	18 12 32.1	2.970
10	15 48 6.73	2.0295	15 11 51.0	5.610	10	17 26 43.43	2.0744	18 14 27.8	2.887
11	15 50 8.54	2.0307	15 17 25.5	5.540	11	17 28 47.91	2.0750	18 16 18.5	2.803
12	15 52 10.41	2.0318	15 22 55.9	5.470	12	17 30 52.43	2.0756	18 18 4.1	2.719
13	15 54 12.35	2.0329	15 28 22.0	5.399	13	17 32 56.98	2.0760	18 19 44.7	2.636
14	15 56 14.36	2.0341	15 33 43.8	5.328	14	17 35 1.55	2.0764	18 21 20.3	2.552
15	15 58 16.44	2.0353	15 39 1.4	5.257	15	17 37 6.17	2.0768	18 22 50.9	2.468
16	16 0 18.59	2.0364	15 44 14.7	5.186	16	17 39 10.75	2.0772	18 24 16.4	2.384
17	16 2 20.81	2.0376	15 49 23.7	5.113	17	17 41 15.42	2.0777	18 25 36.9	2.299
18	16 4 23.09	2.0386	15 54 28.3	5.041	18	17 43 20.09	2.0781	18 26 52.3	2.215
19	16 6 25.44	2.0396	15 59 28.5	4.968	19	17 45 24.78	2.0784	18 28 2.6	2.130
20	16 8 27.86	2.0409	16 4 24.4	4.896	20	17 47 29.50	2.0788	18 29 7.9	2.046
21	16 10 30.34	2.0419	16 9 15.9	4.821	21	17 49 34.24	2.0794	18 30 8.1	1.961
22	16 12 32.89	2.0430	16 14 2.9	4.747	22	17 51 38.99	2.0794	18 31 3.2	1.877
23	16 14 35.51	2.0442	16 18 45.4	4.673	23	17 53 43.76	2.0796	18 31 53.2	1.792
24	16 16 38.19	2.0453	S. 16° 23' 23.5"	4.598	24	17 55 48.54	2.0796	S. 18° 32' 38.2"	1.707

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 17.					WEDNESDAY 19.				
0	17 55 48.54	2.0799	S. 18 32 38.2	0.707	0	19 35 26.12	2.0828	S. 17 29 5.6	2.314
1	17 57 53.33	2.0800	18 33 18.0	0.632	1	19 37 29.86	2.0819	17 25 44.3	2.394
2	17 59 58.14	2.0802	18 33 52.8	0.537	2	19 39 33.55	2.0811	17 22 18.3	2.474
3	18 2 2.06	2.0803	18 34 22.4	0.451	3	19 41 37.19	2.0803	17 18 47.5	2.553
4	18 4 7.78	2.0805	18 34 46.9	0.366	4	19 43 40.78	2.0804	17 15 11.9	2.632
5	18 6 12.61	2.0806	18 35 6.3	0.281	5	19 45 44.31	2.0804	17 11 31.6	2.711
6	18 8 17.45	2.0806	18 35 20.6	0.196	6	19 47 47.79	2.0806	17 7 46.5	2.790
7	18 10 22.29	2.0807	18 35 29.8	0.110	7	19 49 51.22	2.0807	17 3 56.8	2.869
8	18 12 27.13	2.0807	18 35 33.8	0.025	8	19 51 54.59	2.0808	17 0 2.3	2.947
9	18 14 31.97	2.0807	18 35 32.8	0.060	9	19 53 57.91	2.0808	16 56 3.1	3.025
10	18 16 36.81	2.0806	18 35 26.6	0.146	10	19 56 1.17	2.0809	16 51 59.3	3.102
11	18 18 41.65	2.0806	18 35 15.3	0.231	11	19 58 4.37	2.0809	16 47 50.9	3.179
12	18 20 46.48	2.0805	18 34 58.9	0.316	12	20 0 7.52	2.0809	16 43 37.8	3.256
13	18 22 51.31	2.0804	18 34 37.4	0.401	13	20 2 10.61	2.0810	16 39 20.1	3.332
14	18 24 56.13	2.0803	18 34 10.8	0.486	14	20 4 13.64	2.0801	16 34 57.8	3.409
15	18 27 0.95	2.0803	18 33 39.1	0.571	15	20 6 16.61	2.0801	16 30 31.0	3.485
16	18 29 5.75	2.0800	18 33 2.3	0.656	16	20 8 19.53	2.0801	16 25 59.6	3.561
17	18 31 10.54	2.0798	18 32 20.4	0.741	17	20 10 22.39	2.0801	16 21 23.7	3.636
18	18 33 15.32	2.0796	18 31 33.4	0.826	18	20 12 25.18	2.0801	16 16 43.3	3.711
19	18 35 20.09	2.0793	18 30 41.3	0.910	19	20 14 27.92	2.0801	16 11 58.4	3.786
20	18 37 24.84	2.0790	18 29 44.2	0.995	20	20 16 30.59	2.0801	16 7 9.0	3.860
21	18 39 29.57	2.0787	18 28 41.9	1.080	21	20 18 33.21	2.0801	16 2 15.2	3.934
22	18 41 34.28	2.0784	18 27 34.6	1.165	22	20 20 35.76	2.0801	15 57 17.0	4.008
23	18 43 38.98	2.0781	S. 18 26 22.2	1.249	23	20 22 38.25	2.0810	S. 15 52 14.3	4.081
TUESDAY 18.					THURSDAY 20.				
0	18 45 43.65	2.0777	S. 18 25 4.7	1.334	0	20 24 40.68	2.0800	S. 15 47 7.3	4.154
1	18 47 48.30	2.0773	18 23 42.2	1.418	1	20 26 43.05	2.0800	15 41 55.9	4.228
2	18 49 52.93	2.0769	18 22 14.6	1.503	2	20 28 45.36	2.0800	15 36 40.1	4.299
3	18 51 57.53	2.0765	18 20 41.9	1.587	3	20 30 47.61	2.0800	15 31 20.0	4.370
4	18 54 2.11	2.0761	18 19 4.2	1.671	4	20 32 49.80	2.0800	15 25 55.7	4.442
5	18 56 6.66	2.0756	18 17 21.5	1.756	5	20 34 51.93	2.0800	15 20 27.0	4.513
6	18 58 11.18	2.0751	18 15 33.7	1.839	6	20 36 54.00	2.0800	15 14 54.1	4.584
7	19 0 15.67	2.0745	18 13 40.9	1.923	7	20 38 56.01	2.0800	15 9 17.0	4.654
8	19 2 20.12	2.0740	18 11 43.1	2.006	8	20 40 57.96	2.0800	15 3 35.6	4.724
9	19 4 24.54	2.0734	18 9 40.3	2.089	9	20 42 59.85	2.0810	14 57 50.0	4.794
10	19 6 28.93	2.0729	18 7 32.5	2.171	10	20 45 1.68	2.0800	14 52 0.3	4.864
11	19 8 33.28	2.0723	18 5 19.7	2.254	11	20 47 3.45	2.0801	14 46 6.4	4.933
12	19 10 37.60	2.0717	18 3 2.0	2.337	12	20 49 5.17	2.0801	14 40 8.4	5.001
13	19 12 41.88	2.0710	18 0 39.3	2.420	13	20 51 6.82	2.0801	14 34 6.3	5.069
14	19 14 46.12	2.0703	17 58 11.6	2.502	14	20 53 8.42	2.0802	14 28 0.1	5.136
15	19 16 50.32	2.0696	17 55 39.0	2.584	15	20 55 9.96	2.0803	14 21 49.9	5.203
16	19 18 54.47	2.0689	17 53 1.5	2.666	16	20 57 11.45	2.0803	14 15 35.7	5.270
17	19 20 58.58	2.0683	17 50 19.1	2.748	17	20 59 12.88	2.0803	14 9 17.5	5.337
18	19 23 2.65	2.0675	17 47 31.7	2.830	18	21 1 14.25	2.0804	14 2 55.3	5.403
19	19 25 6.68	2.0668	17 44 39.5	2.911	19	21 3 15.57	2.0806	13 56 29.2	5.468
20	19 27 10.66	2.0661	17 41 42.4	2.992	20	21 5 16.84	2.0807	13 49 59.2	5.533
21	19 29 14.60	2.0653	17 38 40.5	3.073	21	21 7 18.05	2.0808	13 43 25.3	5.597
22	19 31 18.49	2.0645	17 35 33.7	3.154	22	21 9 19.21	2.0809	13 36 47.5	5.662
23	19 33 22.33	2.0636	17 32 22.1	3.234	23	21 11 20.32	2.0809	13 30 5.9	5.726
24	19 35 26.12	2.0628	S. 17 29 5.6	3.314	24	21 13 21.37	2.0812	S. 13 23 20.4	5.790

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 21.					SUNDAY 23.				
0	21 13 21.37	2.0173	S. 13 23 20.4	6.790	0	22 49 37.20	2.0048	S. 6 53 4.8	9.283
1	21 15 22.37	2.0163	13 16 31.1	6.863	1	22 51 37.50	2.0053	6 43 46.7	9.292
2	21 17 23.33	2.0155	13 9 38.1	6.915	2	22 53 37.84	2.0059	6 34 26.2	9.300
3	21 19 24.24	2.0148	13 2 41.4	6.977	3	22 55 38.21	2.0066	6 25 3.4	9.308
4	21 21 25.10	2.0140	12 55 40.9	7.039	4	22 57 38.63	2.0073	6 15 38.4	9.436
5	21 23 25.91	2.0132	12 48 36.7	7.101	5	22 59 39.09	2.0080	6 6 11.1	9.473
6	21 25 26.68	2.0125	12 41 28.8	7.163	6	23 1 39.59	2.0087	5 56 41.5	9.510
7	21 27 27.41	2.0118	12 34 17.3	7.223	7	23 3 40.14	2.0093	5 47 9.8	9.546
8	21 29 28.09	2.0110	12 27 2.2	7.282	8	23 5 40.73	2.0104	5 37 36.0	9.582
9	21 31 28.73	2.0103	12 19 43.5	7.342	9	23 7 41.38	2.0113	5 28 0.0	9.617
10	21 33 29.32	2.0096	12 12 21.2	7.401	10	23 9 42.08	2.0123	5 18 22.0	9.651
11	21 35 29.88	2.0090	12 4 55.4	7.460	11	23 11 42.84	2.0133	5 8 41.9	9.684
12	21 37 30.40	2.0084	11 57 26.1	7.517	12	23 13 43.67	2.0143	4 58 59.9	9.717
13	21 39 30.88	2.0078	11 49 53.3	7.575	13	23 15 44.56	2.0153	4 49 15.9	9.749
14	21 41 31.33	2.0072	11 42 17.1	7.632	14	23 17 45.51	2.0163	4 39 30.0	9.781
15	21 43 31.75	2.0067	11 34 37.5	7.688	15	23 19 46.53	2.0177	4 29 42.2	9.813
16	21 45 32.13	2.0061	11 26 54.5	7.744	16	23 21 47.63	2.0189	4 19 52.5	9.843
17	21 47 32.48	2.0056	11 19 8.1	7.800	17	23 23 48.80	2.0202	4 10 1.0	9.873
18	21 49 32.80	2.0051	11 11 18.4	7.855	18	23 25 50.05	2.0215	4 0 7.7	9.902
19	21 51 33.09	2.0046	11 3 25.4	7.910	19	23 27 51.37	2.0228	3 50 12.7	9.931
20	21 53 33.35	2.0042	10 55 29.2	7.964	20	23 29 52.78	2.0242	3 40 16.0	9.959
21	21 55 33.59	2.0038	10 47 29.7	8.018	21	23 31 54.27	2.0256	3 30 17.6	9.987
22	21 57 33.80	2.0034	10 39 27.0	8.071	22	23 33 55.85	2.0271	3 20 17.6	10.014
23	21 59 34.00	2.0031	S. 10 31 21.1	8.124	23	23 35 57.52	2.0287	S. 3 10 16.0	10.040
SATURDAY 22.					MONDAY 24.				
0	22 1 34.17	2.0027	S. 10 23 12.1	8.177	0	23 37 59.29	2.0303	S. 3 0 12.9	10.065
1	22 3 34.32	2.0023	10 14 59.9	8.239	1	23 40 1.15	2.0319	2 50 8.2	10.090
2	22 5 34.45	2.0019	10 6 44.6	8.300	2	23 42 3.12	2.0336	2 40 2.1	10.114
3	22 7 34.57	2.0019	9 58 26.3	8.361	3	23 44 5.19	2.0353	2 29 54.5	10.137
4	22 9 34.68	2.0018	9 50 4.9	8.392	4	23 46 7.36	2.0371	2 19 45.6	10.160
5	22 11 34.78	2.0017	9 41 40.5	8.432	5	23 48 9.64	2.0389	2 9 35.3	10.183
6	22 13 34.88	2.0016	9 33 13.1	8.482	6	23 50 12.03	2.0406	1 59 23.7	10.204
7	22 15 34.97	2.0015	9 24 42.7	8.531	7	23 52 14.54	2.0428	1 49 10.8	10.225
8	22 17 35.06	2.0013	9 16 9.4	8.579	8	23 54 17.17	2.0448	1 38 56.7	10.245
9	22 19 35.13	2.0013	9 7 33.2	8.627	9	23 56 19.92	2.0469	1 28 41.4	10.265
10	22 21 35.20	2.0012	8 58 54.2	8.674	10	23 58 22.79	2.0490	1 18 24.9	10.283
11	22 23 35.27	2.0012	8 50 12.3	8.721	11	0 0 25.79	2.0512	1 8 7.4	10.301
12	22 25 35.34	2.0013	8 41 27.6	8.767	12	0 2 28.93	2.0534	0 57 48.8	10.318
13	22 27 35.42	2.0013	8 32 40.2	8.813	13	0 4 32.20	2.0556	0 47 29.2	10.335
14	22 29 35.50	2.0015	8 23 50.0	8.860	14	0 6 35.60	2.0579	0 37 8.6	10.350
15	22 31 35.59	2.0017	8 14 57.1	8.904	15	0 8 39.14	2.0603	0 26 47.1	10.365
16	22 33 35.70	2.0019	8 6 1.5	8.948	16	0 10 42.83	2.0627	0 16 24.8	10.379
17	22 35 35.82	2.0021	7 57 3.3	8.992	17	0 12 46.66	2.0652	S. 0 6 1.6	10.393
18	22 37 35.95	2.0024	7 48 2.5	9.035	18	0 14 50.65	2.0677	N. 0 4 22.4	10.406
19	22 39 36.10	2.0027	7 38 59.1	9.078	19	0 16 54.79	2.0703	0 14 47.1	10.418
20	22 41 36.27	2.0030	7 29 53.2	9.120	20	0 18 59.08	2.0729	0 25 12.6	10.429
21	22 43 36.46	2.0034	7 20 44.8	9.161	21	0 21 3.53	2.0756	0 35 38.7	10.440
22	22 45 36.68	2.0038	7 11 33.9	9.202	22	0 23 8.15	2.0784	0 46 5.4	10.450
23	22 47 36.93	2.0043	7 2 20.6	9.243	23	0 25 12.94	2.0813	0 56 32.6	10.458
24	22 49 37.20	2.0048	S. 6 53 4.8	9.283	24	0 27 17.89	2.0840	N. 1 7 0.4	10.465

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 25.					THURSDAY 27.				
0	0 27 17.89	2.0840	N. 1° 7' 0.4	10.486	0	2 11 36.23	2.2610	N. 9° 21' 26.7	8.743
1	0 29 23.01	2.0868	1 17 28.6	10.474	1	2 13 53.24	2.2692	9 31 10.0	8.701
2	0 31 28.31	2.0898	1 27 57.3	10.481	2	2 16 10.59	2.2914	9 40 50.8	8.637
3	0 33 33.79	2.0928	1 38 26.3	10.486	3	2 18 28.21	2.2966	9 50 28.9	8.612
4	0 35 39.45	2.0959	1 48 55.6	10.491	4	2 20 46.16	2.3019	10 0 4.3	8.566
5	0 37 45.30	2.0990	1 59 25.2	10.495	5	2 23 4.43	2.3073	10 9 36.9	8.519
6	0 39 51.33	2.1022	2 9 55.0	10.498	6	2 25 23.03	2.3126	10 19 6.6	8.471
7	0 41 57.56	2.1054	2 20 24.9	10.501	7	2 27 41.94	2.3179	10 28 33.4	8.423
8	0 44 3.98	2.1087	2 30 55.0	10.503	8	2 30 1.18	2.3233	10 37 57.2	8.371
9	0 46 10.60	2.1120	2 41 25.1	10.503	9	2 32 20.74	2.3288	10 47 17.8	8.318
10	0 48 17.42	2.1154	2 51 55.3	10.503	10	2 34 40.63	2.3343	10 56 35.3	8.264
11	0 50 24.45	2.1188	3 2 25.4	10.501	11	2 37 0.85	2.3398	11 5 49.6	8.216
12	0 52 31.68	2.1223	3 12 55.3	10.498	12	2 39 21.40	2.3453	11 15 0.5	8.164
13	0 54 39.13	2.1259	3 23 25.1	10.495	13	2 41 42.28	2.3508	11 24 8.0	8.098
14	0 56 46.79	2.1295	3 33 54.7	10.491	14	2 44 3.49	2.3563	11 33 12.0	8.027
15	0 58 54.66	2.1331	3 44 24.0	10.486	15	2 46 25.03	2.3618	11 42 12.5	8.978
16	1 1 2.76	2.1368	3 54 53.0	10.480	16	2 48 46.90	2.3673	11 51 9.3	8.917
17	1 3 11.08	2.1406	4 5 21.6	10.473	17	2 51 9.11	2.3728	12 0 2.4	8.858
18	1 5 19.63	2.1444	4 15 49.8	10.465	18	2 53 31.65	2.3783	12 8 51.7	8.798
19	1 7 28.40	2.1482	4 26 17.5	10.457	19	2 55 54.53	2.3841	12 17 37.0	8.733
20	1 9 37.41	2.1491	4 36 44.6	10.448	20	2 58 17.74	2.3897	12 26 18.5	8.667
21	1 11 46.65	2.1461	4 47 11.1	10.437	21	3 0 41.29	2.3953	12 34 55.9	8.599
22	1 13 56.14	2.1401	4 57 37.0	10.426	22	3 3 5.17	2.4009	12 43 29.2	8.519
23	1 16 5.87	2.1342	N. 5 8 2.1	10.413	23	3 5 29.39	2.4065	N.12 51 58.2	8.447
WEDNESDAY 26.					FRIDAY 28.				
0	1 18 15.84	2.1988	N. 5 18 26.5	10.398	0	3 7 33.95	2.4121	N.13 0 22.9	8.374
1	1 20 26.06	2.1726	5 28 50.0	10.384	1	3 10 18.85	2.4176	13 8 43.2	8.301
2	1 22 36.54	2.1767	5 39 12.6	10.368	2	3 12 44.08	2.4233	13 16 59.0	8.226
3	1 24 47.27	2.1809	5 49 34.2	10.351	3	3 15 9.65	2.4289	13 25 10.3	8.149
4	1 26 58.25	2.1852	5 59 54.7	10.333	4	3 17 35.55	2.4346	13 33 16.9	8.071
5	1 29 9.49	2.1896	6 10 14.1	10.314	5	3 20 1.79	2.4402	13 41 18.8	7.993
6	1 31 21.00	2.1940	6 20 32.4	10.294	6	3 22 28.37	2.4457	13 49 15.9	7.911
7	1 33 32.78	2.1985	6 30 49.4	10.273	7	3 24 55.28	2.4513	13 57 8.1	7.829
8	1 35 44.82	2.2030	6 41 5.2	10.251	8	3 27 22.53	2.4568	14 4 55.4	7.746
9	1 37 57.13	2.2075	6 51 19.6	10.228	9	3 29 50.11	2.4624	14 12 37.6	7.661
10	1 40 9.72	2.2121	7 1 32.6	10.208	10	3 32 18.02	2.4679	14 20 14.7	7.575
11	1 42 22.58	2.2168	7 11 44.1	10.178	11	3 34 46.26	2.4734	14 27 46.5	7.487
12	1 44 35.73	2.2215	7 21 54.0	10.152	12	3 37 14.83	2.4789	14 35 13.1	7.398
13	1 46 49.16	2.2262	7 32 2.3	10.126	13	3 39 43.73	2.4843	14 42 34.3	7.306
14	1 49 2.87	2.2310	7 42 9.0	10.096	14	3 42 12.95	2.4897	14 49 50.0	7.216
15	1 51 16.87	2.2358	7 52 13.9	10.066	15	3 44 42.50	2.4952	14 57 0.2	7.123
16	1 53 31.16	2.2405	8 2 16.9	10.036	16	3 47 12.37	2.5006	15 4 4.7	7.029
17	1 55 45.74	2.2453	8 12 18.0	10.008	17	3 49 42.56	2.5059	15 11 3.5	6.933
18	1 58 0.62	2.2500	8 22 17.2	9.980	18	3 52 13.07	2.5111	15 17 56.6	6.836
19	2 0 15.80	2.2555	8 32 14.3	9.954	19	3 54 43.90	2.5164	15 24 43.8	6.737
20	2 2 31.28	2.2605	8 42 9.3	9.928	20	3 57 15.04	2.5216	15 31 25.0	6.637
21	2 4 47.06	2.2655	8 52 2.1	9.861	21	3 59 46.49	2.5268	15 38 0.3	6.536
22	2 7 3.14	2.2706	9 1 52.7	9.823	22	4 2 18.25	2.5319	15 44 29.4	6.434
23	2 9 19.53	2.2758	9 11 40.9	9.783	23	4 4 50.32	2.5370	15 50 52.3	6.330
24	2 11 36.23	2.2810	N. 9 21 26.7	9.743	24	4 7 22.69	2.5420	N.15 57 9.0	6.225

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 29.					SUNDAY 30.				
0	4 7 22.69	2.6420	N.15° 57' 9.0	6.325	0	5 9 40.56	2.6419	N.17° 53' 24.2	3.360
1	4 9 55.36	2.6469	16 3 19.8	6.318	1	5 12 19.17	2.6449	17 56 41.8	3.328
2	4 12 28.32	2.6518	16 9 23.2	6.010	2	5 14 57.95	2.6478	17 59 51.5	3.096
3	4 15 1.57	2.6567	16 15 20.6	5.902	3	5 17 36.91	2.6507	18 2 53.2	2.962
4	4 17 35.12	2.6616	16 21 11.4	5.793	4	5 20 16.03	2.6534	18 5 46.9	2.828
5	4 20 8.96	2.6664	16 26 55.6	5.681	5	5 22 55.31	2.6560	18 8 32.5	2.693
6	4 22 43.09	2.6711	16 32 33.1	5.569	6	5 25 34.75	2.6584	18 11 10.0	2.558
7	4 25 17.50	2.6758	16 38 3.8	5.455	7	5 28 14.33	2.6608	18 13 39.4	2.423
8	4 27 52.18	2.6802	16 43 27.7	5.340	8	5 30 54.05	2.6631	18 16 0.6	2.288
9	4 30 27.12	2.6846	16 48 44.6	5.224	9	5 33 33.91	2.6653	18 18 13.6	2.148
10	4 33 2.33	2.6890	16 53 54.6	5.107	10	5 36 13.89	2.6673	18 20 18.3	2.010
11	4 35 37.80	2.6933	16 58 57.6	4.989	11	5 38 53.99	2.6693	18 22 14.8	1.873
12	4 38 13.52	2.6976	17 3 53.4	4.870	12	5 41 34.20	2.6711	18 24 3.0	1.733
13	4 40 49.50	2.6018	17 8 42.0	4.749	13	5 44 14.52	2.6728	18 25 42.8	1.594
14	4 43 25.74	2.6059	17 13 23.3	4.628	14	5 46 54.94	2.6743	18 27 14.3	1.456
15	4 46 2.22	2.6099	17 17 57.3	4.506	15	5 49 35.44	2.6758	18 28 37.4	1.315
16	4 48 38.93	2.6138	17 22 24.0	4.383	16	5 52 16.03	2.6771	18 29 52.1	1.175
17	4 51 15.88	2.6177	17 26 43.2	4.258	17	5 54 56.69	2.6783	18 30 58.4	1.034
18	4 53 53.05	2.6214	17 30 54.7	4.133	18	5 57 37.42	2.6793	18 31 56.2	0.893
19	4 56 30.45	2.6251	17 34 58.8	4.008	19	6 0 18.21	2.6803	18 32 45.5	0.752
20	4 59 8.06	2.6288	17 38 55.3	3.877	20	6 2 59.05	2.6811	18 33 26.4	0.610
21	5 1 45.88	2.6321	17 42 44.1	3.749	21	6 5 39.94	2.6818	18 33 58.7	0.468
22	5 4 23.91	2.6355	17 46 25.2	3.620	22	6 8 20.86	2.6823	18 34 22.6	0.327
23	5 7 2.14	2.6388	17 49 58.6	3.490	23	6 11 1.81	2.6827	18 34 38.0	0.186
24	5 9 40.56	2.6419	N.17° 53' 24.2	3.359	24	6 13 42.78	2.6830	N.18° 34' 44.8	0.043

PHASES OF THE MOON.

● New Moon,	d	h	m
☾ First Quarter,	8	18	37.3
○ Full Moon,	16	16	54.4
☾ Last Quarter,	24	17	29.0

☾ Perigee,	d	h
☾ Apogee,	17	4.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXh.	P. L. of Diff.
4	SUN	W.	33° 57' 20"	2390	35° 40' 56"	2407	37° 24' 21"	2415	39° 7' 35"	2424
	Regulus	E.	40 42 26	2068	38 50 38	2079	36 59 7	2091	35 7 54	2104
	Spica	E.	94 17 13	2075	92 25 35	2086	90 34 13	2096	88 43 8	2108
5	SUN	W.	47 39 57	2485	49 21 32	2498	51 2 48	2512	52 43 44	2527
	Regulus	E.	25 57 5	2178	24 8 5	2195	22 19 30	2213	20 31 22	2233
	Spica	E.	79 32 30	2175	77 43 25	2189	75 54 41	2204	74 6 20	2219
	Saturn	E.	106 47 49	2143	104 57 55	2157	103 8 23	2173	101 19 13	2187
6	SUN	W.	61 3 2	2607	62 41 47	2626	64 20 8	2643	65 58 6	2659
	Pollux	W.	27 0 51	2673	28 38 9	2688	30 15 59	2699	31 54 13	2617
	Spica	E.	65 10 23	2301	63 24 25	2317	61 38 51	2335	59 53 42	2352
	Saturn	E.	92 19 7	2366	90 32 17	2383	88 45 51	2398	86 59 49	2415
	Antares	E.	110 49 54	2360	109 5 7	2365	107 20 41	2380	105 36 38	2396
7	SUN	W.	74 2 5	2747	75 37 42	2766	77 12 55	2783	78 47 45	2801
	Pollux	W.	40 8 5	2804	41 46 54	2810	43 25 36	2816	45 4 10	2823
	Spica	E.	51 14 16	2441	49 31 40	2459	47 49 29	2477	46 7 44	2496
	Saturn	E.	78 15 43	2398	76 32 6	2416	74 48 54	2433	73 6 6	2449
	Antares	E.	97 1 59	2476	95 20 12	2493	93 38 49	2509	91 57 48	2526
8	SUN	W.	86 36 11	2888	88 8 45	2905	89 40 57	2922	91 12 48	2939
	Pollux	W.	53 14 12	2870	54 51 32	2881	56 28 37	2892	58 5 27	2904
	Spica	E.	37 45 26	2590	36 6 17	2609	34 27 34	2629	32 49 18	2649
	Saturn	E.	64 37 51	2631	62 57 21	2648	61 17 14	2663	59 37 28	2678
	Antares	E.	83 38 30	2606	81 59 46	2625	80 21 25	2641	78 43 26	2657
9	SUN	W.	98 46 46	3021	100 16 33	3036	101 46 1	3052	103 15 10	3066
	Pollux	W.	66 5 43	2713	67 40 59	2776	69 15 58	2788	70 50 41	2800
	Mars	W.	34 19 40	2886	35 52 17	2899	37 24 37	2913	38 56 41	2924
	Regulus	W.	29 24 36	2684	31 1 38	2696	32 38 23	2709	34 14 51	2722
	Spica	E.	24 45 8	2763	23 9 52	2791	21 35 12	2821	20 1 11	2855
	Saturn	E.	51 23 54	2654	49 46 12	2669	48 8 50	2683	46 31 47	2698
	Antares	E.	70 38 58	2738	69 3 9	2753	67 27 40	2769	65 52 32	2785
10	SUN	W.	110 36 26	3138	112 3 50	3182	113 30 57	3164	114 57 49	3178
	Pollux	W.	78 40 26	2859	80 13 38	2870	81 46 35	2881	83 19 18	2892
	Mars	W.	46 32 59	2987	48 3 28	2999	49 33 42	3010	51 3 42	3022
	Regulus	W.	42 12 57	2784	43 47 46	2795	45 22 20	2807	46 56 39	2818
	Saturn	E.	38 31 6	2763	36 55 50	2775	35 20 50	2786	33 46 7	2801
	Antares	E.	58 1 53	2862	56 28 45	2876	54 55 56	2892	53 23 27	2908
11	SUN	W.	122 8 21	3236	123 33 45	3250	124 58 55	3261	126 23 52	3271
	Pollux	W.	90 59 27	2945	92 30 49	2954	94 1 59	2965	95 32 56	2974
	Mars	W.	58 30 12	3076	59 58 51	3086	61 27 18	3096	62 55 33	3105
	Regulus	W.	54 44 42	2871	56 17 38	2880	57 50 23	2889	59 22 56	2898
	Saturn	E.	25 56 26	2859	24 23 15	2871	22 50 19	2883	21 17 38	2894
	Antares	E.	45 45 59	2967	44 15 30	3003	42 45 21	3021	41 15 34	3038
12	SUN	W.	133 25 32	3324	134 49 16	3333	136 12 49	3343	137 36 11	3353
	Pollux	W.	103 4 46	3020	104 34 34	3028	106 4 12	3037	107 33 39	3047
	Mars	W.	70 14 4	3148	71 41 16	3156	73 8 18	3163	74 35 12	3171
	Regulus	W.	67 2 52	2911	68 34 19	2917	70 5 38	2924	71 36 48	2933
	Antares	E.	33 52 26	3143	32 25 9	3170	30 58 24	3198	29 32 13	3230
	α Aquilæ	E	83 46 51	3387	82 24 20	3399	81 2 2	3409	79 39 56	3421

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position	Noon.	P. L. of Dist.	III ^a .	P. L. of Dist.	VI ^a .	P. L. of Dist.	IX ^a .	P. L. of Dist.
13	Mars W.	76° 1' 56"	3178	77° 28' 32"	3184	78° 55' 0"	3191	80° 21' 20"	3197
	Regulus W.	73 7 49	3069	74 38 41	3074	76 9 26	3061	77 40 3	3068
	Spica W.	20 1 25	3067	21 29 51	3080	22 58 25	3073	24 27 7	3069
	α Aquilæ E.	78 18 3	3433	76 56 24	3446	75 34 59	3456	74 13 48	3471
	Fomalhaut E.	110 54 4	3360	109 31 1	3366	108 7 57	3366	106 44 52	3366
14	Mars W.	87 31 14	3226	88 56 53	3230	90 22 27	3236	91 47 55	3239
	Spica W.	31 51 29	3064	33 20 23	3064	34 49 17	3063	36 18 9	3066
	α Aquilæ E.	67 31 51	3347	66 12 19	3366	64 53 7	3363	63 34 14	3363
	Fomalhaut E.	99 49 39	3363	98 26 40	3366	97 3 44	3367	95 40 50	3376
	Jupiter E.	104 7 41	3038	102 38 3	3033	101 8 30	3037	99 39 3	3041
15	Mars W.	96 54 0	3260	100 19 0	3263	101 43 56	3265	103 8 48	3266
	Spica W.	43 42 6	3074	45 10 47	3078	46 39 27	3077	48 8 5	3078
	α Aquilæ E.	57 5 30	3718	55 49 2	3746	54 33 2	3774	53 17 33	3806
	Fomalhaut E.	88 47 9	3366	87 24 36	3369	86 2 7	3393	84 39 43	3396
	Jupiter E.	92 12 59	3069	90 43 59	3061	89 15 2	3065	87 46 9	3067
16	Spica W.	55 30 49	3061	56 59 18	3068	58 27 45	3067	59 56 11	3067
	Saturn W.	28 44 55	3063	30 14 2	3066	31 43 7	3066	33 12 10	3066
	α Aquilæ E.	47 9 7	4006	45 57 33	4066	44 46 49	4111	43 36 58	4173
	Fomalhaut E.	77 49 2	3434	76 27 13	3436	75 5 30	3457	73 43 55	3443
	Jupiter E.	80 22 27	3076	78 53 50	3079	77 25 15	3080	75 56 41	3082
17	α Pegasi E.	92 35 24	3323	91 11 39	3324	89 47 55	3326	88 24 13	3326
	Spica W.	67 18 12	3069	68 46 35	3069	70 14 59	3068	71 43 23	3069
	Saturn W.	40 37 22	3066	42 6 23	3066	43 35 24	3066	45 4 24	3067
	Antares W.	23 5 19	3406	24 26 19	3436	25 48 7	3389	27 10 36	3386
	Fomalhaut E.	66 58 3	3484	65 37 21	3486	64 16 51	3486	62 56 33	3417
18	Jupiter E.	68 34 12	3063	67 5 44	3066	65 87 17	3065	64 8 49	3066
	α Pegasi E.	81 26 19	3330	80 2 53	3341	78 39 29	3346	77 16 9	3346
	Spica W.	79 5 29	3064	80 33 58	3063	82 2 28	3063	83 31 0	3069
	Saturn W.	52 29 39	3064	53 58 45	3062	55 27 53	3062	56 57 2	3066
	Antares W.	34 10 21	3366	35 35 24	3343	37 0 44	3329	38 26 19	3316
19	Fomalhaut E.	56 18 32	3406	54 59 45	3406	53 41 17	3326	52 23 10	3346
	Jupiter E.	56 46 25	3062	55 17 53	3061	53 49 20	3079	52 20 45	3076
	α Pegasi E.	70 20 30	3306	68 57 37	3372	67 34 49	3376	66 12 7	3364
	Spica W.	90 54 19	3069	92 23 7	3065	93 51 59	3063	95 20 54	3069
	Saturn W.	64 23 24	3039	65 52 49	3036	67 22 18	3033	68 51 50	3029
20	Antares W.	45 37 23	3169	47 4 9	3100	48 31 6	3163	49 58 12	3144
	Jupiter E.	44 57 18	3067	43 28 28	3066	41 59 35	3061	40 30 36	3068
	Fomalhaut E.	45 59 3	3767	44 43 47	3823	43 29 8	3863	42 15 11	3909
	α Pegasi E.	59 20 27	3430	57 58 33	3429	56 36 49	3439	55 15 17	3461
	Saturn W.	76 20 41	3069	77 50 42	3064	79 20 50	3066	80 51 5	3064
21	Antares W.	57 16 2	3107	58 44 3	3101	60 12 12	3092	61 40 31	3086
	Jupiter E.	33 4 50	3039	31 35 27	3036	30 5 58	3031	28 36 24	3026
	α Pegasi E.	48 31 13	3326	47 11 18	3346	45 51 45	3366	44 32 36	3364
	α Arietis E.	90 31 9	3148	89 3 58	3144	87 36 42	3130	86 9 20	3134
	Venus E.	118 8 57	3466	116 48 27	3469	115 27 51	3484	114 7 9	3477
21	Saturn W.	88 24 2	3063	89 55 1	3066	91 26 9	3049	92 57 26	3043
	Antares W.	69 4 27	3046	70 33 43	3037	72 3 10	3029	73 32 48	3020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XV ^a .	P. L. of Dist.	XVIII ^b .	P. L. of Dist.	XXI ^c .	P. L. of Dist.
13	Mars	W.	81° 47' 33"	3204	83° 13' 38"	3209	84° 39' 37"	3214	86° 5' 29"	3220
	Regulus	W.	79 10 31	3203	80 40 52	3208	82 11 7	3204	83 41 15	3209
	Spica	W.	25 55 54	3265	27 24 46	3264	28 53 40	3263	30 22 35	3264
	α Aquilæ	E.	72 52 52	3486	71 32 12	3500	70 11 48	3515	68 51 41	3531
	Fomalhaut	E.	105 21 48	3256	103 56 44	3259	102 35 41	3260	101 12 39	3262
14	Mars	W.	93 13 18	3244	94 38 35	3247	96 3 48	3253	97 28 56	3255
	Spica	W.	37 47 0	3268	39 15 49	3269	40 44 37	3271	42 13 22	3273
	α Aquilæ	E.	62 15 43	3232	60 57 34	3246	59 39 48	3267	58 22 26	3282
	Fomalhaut	E.	94 17 59	3273	92 55 11	3276	91 32 27	3279	90 9 46	3282
	Jupiter	E.	98 9 41	3045	96 40 24	3048	95 11 11	3052	93 42 3	3056
15	Mars	W.	104 33 37	3271	105 58 22	3273	107 23 5	3276	108 47 45	3278
	Spica	W.	49 36 41	3260	51 5 15	3261	52 33 48	3262	54 2 19	3263
	α Aquilæ	E.	52 2 36	3240	50 48 15	3276	49 34 31	3216	48 21 27	3269
	Fomalhaut	E.	83 17 24	3462	81 55 10	3407	80 33 1	3412	79 10 58	3416
	Jupiter	E.	86 17 19	3269	84 48 32	3273	83 19 48	3273	81 51 6	3276
16	Spica	W.	61 24 37	3266	62 53 1	3268	64 21 25	3268	65 49 49	3269
	Saturn	W.	34 41 14	3266	36 10 17	3266	37 39 20	3268	39 8 21	3268
	α Aquilæ	E.	42 28 5	4287	41 20 14	4210	40 13 31	4292	39 8 3	4480
	Fomalhaut	E.	72 22 27	3451	71 1 8	3466	69 39 57	3466	68 18 55	3475
	Jupiter	E.	74 28 9	3262	72 59 38	3263	71 31 9	3264	70 2 40	3265
	α Pegasi	E.	87 0 34	3230	85 36 57	3231	84 13 21	3233	82 49 48	3237
17	Spica	W.	73 11 46	3266	74 40 10	3267	76 8 36	3267	77 37 2	3268
	Saturn	W.	46 33 26	3267	48 2 28	3266	49 31 31	3266	51 0 34	3265
	Antares	W.	28 33 40	3233	29 57 14	3210	31 21 14	3290	32 45 37	3272
	Fomalhaut	E.	61 36 28	3229	60 16 36	3243	58 56 59	3256	57 37 37	3272
	Jupiter	E.	62 40 21	3265	61 11 53	3264	59 43 25	3264	58 14 55	3263
	α Pegasi	E.	75 52 53	3231	74 29 41	3234	73 6 32	3236	71 43 28	3234
18	Spica	W.	84 59 34	3278	86 28 11	3278	87 56 51	3273	89 25 34	3271
	Saturn	W.	58 26 14	3247	59 55 28	3246	61 24 44	3244	62 54 2	3241
	Antares	W.	39 52 7	3207	41 18 8	3196	42 44 22	3187	44 10 47	3178
	Fomalhaut	E.	51 5 27	3271	49 48 9	3268	48 31 17	3223	47 14 54	3253
	Jupiter	E.	50 52 8	3276	49 23 29	3274	47 54 48	3272	46 26 4	3269
	α Pegasi	E.	64 49 32	3290	63 27 4	3290	62 4 43	3403	60 42 30	3412
19	Spica	W.	96 49 53	3266	96 18 57	3259	99 48 5	3248	101 17 18	3245
	Saturn	W.	70 21 27	3236	71 51 8	3223	73 20 54	3215	74 50 45	3214
	Antares	W.	51 25 28	3187	52 52 53	3129	54 20 27	3192	55 48 10	3114
	Jupiter	E.	39 1 37	3265	37 32 32	3269	36 3 23	3247	34 34 9	3243
	Fomalhaut	E.	41 2 0	3266	39 49 39	4014	38 38 13	4077	37 27 49	4146
	α Pegasi	E.	53 53 58	3463	52 32 53	3476	51 12 2	3491	49 51 28	3496
20	Saturn	W.	82 21 25	2968	83 51 53	2992	85 22 28	2976	86 53 11	2990
	Antares	W.	63 8 59	3277	64 37 37	3269	66 6 24	3261	67 35 21	3264
	Jupiter	E.	27 6 44	3292	25 36 59	3218	24 7 8	3213	22 37 11	3208
	α Pegasi	E.	43 13 55	3233	41 55 45	3263	40 38 8	3269	39 21 9	3239
	α Arctis	E.	84 41 52	3139	83 14 18	3124	81 46 37	3119	80 18 50	3114
	Venus	E.	112 46 19	3471	111 25 23	3464	110 4 19	3457	108 43 7	3450
21	Saturn	W.	94 28 52	2933	96 0 29	2924	97 32 17	2916	99 4 15	2908
	Antares	W.	75 2 36	3211	76 32 35	3201	78 2 46	3202	79 33 8	3203

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
21	α Pegasi E.	38° 4' 53"	3775	36° 49' 25"	3926	35° 34' 50"	3886	34° 21' 16"	3943
	α Arietis E.	78 50 57	3108	77 22 57	3103	75 54 51	3087	74 26 38	3091
	Venus E.	107 21 47	3443	106 0 19	3435	104 38 42	3426	103 16 55	3418
	SUN E.	132 51 24	3365	131 28 27	3365	130 5 20	3346	128 42 2	3336
22	Antares W.	81 3 43	2973	82 34 30	2962	84 5 30	2963	85 36 42	2942
	α Aquilæ W.	39 1 58	4239	40 9 47	4146	41 19 4	4063	42 29 42	3963
	α Arietis E.	67 3 45	3062	65 34 49	3056	64 5 45	3050	62 36 34	3046
	Venus E.	96 25 28	3370	95 2 37	3360	93 39 35	3346	92 16 19	3337
	SUN E.	121 42 44	3286	120 18 16	3275	118 53 35	3263	117 28 40	3253
23	Antares W.	93 16 10	2985	94 48 48	2974	96 21 40	2962	97 54 48	2948
	α Aquilæ W.	48 40 39	3672	49 57 56	3622	51 16 7	3575	52 35 9	3529
	α Arietis E.	55 8 58	3018	53 39 8	3014	52 9 13	3010	50 39 13	3007
	Venus E.	85 16 36	3276	83 51 56	3262	82 27 0	3248	81 1 48	3234
	SUN E.	110 20 33	3188	108 54 10	3175	107 27 31	3161	106 0 35	3146
24	Antares W.	105 44 36	2784	107 19 25	2771	108 54 31	2757	110 29 55	2743
	α Aquilæ W.	59 22 3	3335	60 45 34	3301	62 9 44	3269	63 34 32	3237
	Fomalhaut W.	29 33 9	4586	30 35 46	4569	31 41 8	4534	32 49 2	4498
	α Arietis E.	43 8 34	3005	41 38 28	3010	40 8 28	3016	38 38 35	3024
	Venus E.	73 51 28	3159	72 24 30	3143	70 57 13	3127	69 29 36	3110
	SUN E.	98 41 28	3071	97 12 43	3055	95 43 38	3039	94 14 13	3022
25	α Aquilæ W.	70 47 25	3096	72 15 40	3070	73 44 26	3046	75 13 43	3020
	Fomalhaut W.	39 0 17	3448	40 19 48	3406	41 40 48	3364	43 3 11	3327
	Jupiter W.	29 10 22	2905	30 49 10	2886	32 28 22	2860	34 7 59	2842
	α Pegasi W.	25 45 52	4479	26 50 3	4426	27 57 41	4368	29 8 24	4292
	Venus E.	62 6 22	3024	60 36 39	3006	59 6 34	2989	57 36 8	2970
	SUN E.	86 41 53	2935	85 10 19	2918	83 38 23	2900	82 6 4	2881
26	α Aquilæ W.	82 47 28	2909	84 19 36	2889	85 52 9	2869	87 25 8	2849
	Fomalhaut W.	50 13 3	3092	51 42 11	3007	53 12 15	2965	54 43 12	2924
	Jupiter W.	42 32 14	2462	44 14 21	2444	45 56 53	2426	47 39 51	2408
	α Pegasi W.	35 38 56	3305	37 3 0	3224	38 28 41	3149	39 55 51	3061
	Venus E.	49 58 9	2879	48 25 23	2861	46 52 14	2843	45 18 42	2825
	SUN E.	74 18 33	2788	72 43 50	2770	71 8 43	2751	69 33 11	2733
27	Fomalhaut W.	62 30 1	2780	64 5 35	2719	65 41 49	2691	67 18 41	2668
	Jupiter W.	56 21 6	2318	58 6 39	2301	59 52 37	2283	61 39 1	2266
	α Pegasi W.	47 30 39	2811	49 4 52	2769	50 40 1	2728	52 16 4	2689
	Venus E.	37 25 10	2737	35 49 19	2721	34 13 7	2705	32 36 34	2690
	SUN E.	61 29 22	2640	59 51 22	2623	58 12 58	2604	56 34 9	2586
28	Fomalhaut W.	75 31 47	2544	77 11 59	2522	78 52 41	2503	80 33 50	2485
	Jupiter W.	70 37 16	2184	72 26 8	2169	74 15 23	2153	76 5 1	2139
	α Pegasi W.	60 28 9	2680	62 8 40	2604	63 49 48	2479	65 31 31	2454
	α Arietis W.	18 56 8	3098	20 13 5	3439	21 34 37	3223	23 0 7	3066
	SUN E.	48 14 16	2305	46 33 10	2491	44 51 44	2477	43 9 58	2463
29	Fomalhaut W.	89 5 27	2410	90 48 47	2400	92 32 22	2389	94 16 12	2380
	Jupiter W.	85 18 35	2072	87 10 17	2060	89 2 18	2049	90 54 36	2038
	α Pegasi W.	74 8 0	2855	75 52 40	2839	77 37 43	2824	79 23 8	2810
	α Arietis W.	30 49 2	2669	32 28 39	2610	34 9 39	2487	35 51 53	2411
	SUN E.	34 36 38	2407	32 53 13	2400	31 9 38	2393	29 25 53	2389

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
21	α Pegasi E.	33° 8' 50"	4081	31° 57' 41"	4190	30° 47' 59"	4322	29° 39' 54"	4340
	α Arietis E.	72 58 18	3086	71 29 51	3079	70 1 16	3073	68 32 34	3068
	Venus E.	101 54 59	3408	100 32 52	3400	99 10 35	3390	97 48 7	3380
	SUN E.	127 18 34	3327	125 54 54	3318	124 31 3	3307	123 7 0	3296
22	Antares W.	87 8 8	2931	88 39 47	2920	90 11 40	2909	91 43 48	2898
	α Aquilæ W.	43 41 38	3912	44 54 46	3946	46 9 1	3784	47 24 20	3737
	α Arietis E.	61 7 17	3039	59 37 53	3033	58 8 21	3028	56 38 43	3022
	Venus E.	90 52 50	3326	89 29 8	3313	88 5 12	3301	86 41 2	3288
	SUN E.	116 3 32	3239	114 38 9	3227	113 12 32	3214	111 46 40	3203
23	Antares W.	99 28 12	2936	101 1 53	2924	102 35 50	2910	104 10 5	2798
	α Aquilæ W.	53 55 1	3487	55 15 40	3446	56 37 5	3408	57 59 13	3371
	α Arietis E.	49 9 9	3006	47 39 2	3003	46 8 53	3002	44 38 43	3003
	Venus E.	79 36 19	3220	78 10 33	3204	76 44 29	3190	75 18 8	3174
	SUN E.	104 33 21	3132	103 5 50	3117	101 38 1	3102	100 9 54	3087
24	Antares W.	112 5 38	3729	113 41 39	3716	115 17 58	3701	116 54 36	3687
	α Aquilæ W.	64 59 57	3207	66 25 58	3178	67 52 33	3150	69 19 42	3123
	Fomalhaut W.	33 59 17	3955	35 11 41	3936	36 26 6	3780	37 42 21	3635
	α Arietis E.	37 8 52	3036	35 39 24	3032	34 10 16	3073	32 41 33	3036
	Venus E.	68 1 38	3093	66 33 20	3077	65 4 42	3060	63 35 43	3043
	SUN E.	92 44 27	3005	91 14 21	2998	89 43 53	2971	88 13 4	2964
25	α Aquilæ W.	76 43 31	2997	78 13 48	2973	79 44 34	2962	81 15 47	2930
	Fomalhaut W.	44 26 51	3265	45 51 44	3206	47 17 47	3182	48 44 54	3101
	Jupiter W.	35 48 0	2334	37 28 26	2316	39 9 17	2498	40 50 33	2460
	α Pegasi W.	30 21 53	3744	31 37 54	3614	32 56 13	3500	34 16 37	3396
	Venus E.	56 5 18	2952	54 34 5	2935	53 2 30	2916	51 30 31	2898
	SUN E.	80 33 21	2963	79 0 15	2945	77 26 45	2926	75 52 51	2908
26	α Aquilæ W.	88 58 31	2931	90 32 18	2915	92 6 27	2798	93 40 58	2783
	Fomalhaut W.	56 15 0	2996	57 47 37	2950	59 21 0	2915	60 55 8	2781
	Jupiter W.	49 23 14	2390	51 7 3	2373	52 51 19	2364	54 35 59	2336
	α Pegasi W.	41 24 24	3018	42 54 14	2961	44 25 16	2907	45 57 26	2858
	Venus E.	43 44 46	2906	42 10 26	2789	40 35 44	2771	39 0 38	2754
	SUN E.	67 57 15	3714	66 20 54	2696	64 44 8	2677	63 6 57	2659
27	Fomalhaut W.	68 56 10	2638	70 34 14	2612	72 12 53	2598	73 52 5	2566
	Jupiter W.	63 25 50	2349	65 13 5	2223	67 0 44	2216	68 48 48	2200
	α Pegasi W.	53 52 58	2654	55 30 40	2621	57 9 7	2569	58 48 17	2559
	Venus E.	30 59 41	2675	29 22 28	2663	27 44 59	2631	26 7 13	2640
	SUN E.	54 54 57	2670	53 15 21	2648	51 35 22	2587	49 55 0	2521
28	Fomalhaut W.	82 15 24	2468	83 57 22	2462	85 39 43	2437	87 22 25	2423
	Jupiter W.	77 55 2	2124	79 45 24	2111	81 36 7	2097	83 27 11	2084
	α Pegasi W.	67 13 49	2431	68 56 39	2411	70 39 58	2391	72 23 45	2373
	α Arietis W.	24 26 58	2929	26 0 40	2916	27 34 47	2780	29 11 0	2689
	SUN E.	41 27 52	2460	39 45 28	2459	38 2 47	2436	36 19 50	2416
29	Fomalhaut W.	96 0 15	2373	97 44 29	2367	99 28 51	2363	101 13 20	2366
	Jupiter W.	92 47 10	2028	94 40 0	2019	96 33 4	2010	98 26 22	2003
	α Pegasi W.	81 8 53	2298	82 54 56	2286	84 41 16	2276	86 27 51	2267
	α Arietis W.	37 35 12	2371	39 19 28	2356	41 4 36	2364	42 50 29	2377
	SUN E.	27 42 2	2386	25 58 7	2386	24 14 12	2388	22 30 20	2394

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter				
Mon.	1	^h 6 ^m 39 ^s 44.23	10.346	N. 23° 8' 21.5"	9.32	15 46.11	68.79	^m 3 ^s 26.74	0.489	
Tues.	2	6 43 52.44	10.335	23 4 13.6	10.83	15 46.10	68.76	3 38.36	0.479	
Wed.	3	6 48 0.38	10.323	22 59 41.6	11.83	15 46.10	68.72	3 49.71	0.467	
Thur.	4	6 52 8.03	10.310	22 54 45.5	12.83	15 46.11	68.68	4 0.77	0.454	
Fri.	5	6 56 15.36	10.296	22 49 25.5	13.83	15 46.12	68.63	4 11.51	0.440	
Sat.	6	7 0 22.35	10.282	22 43 41.7	14.81	15 46.14	68.58	4 21.92	0.425	
Sun.	7	7 4 28.97	10.266	22 37 34.2	15.80	15 46.16	68.53	4 31.95	0.409	
Mon.	8	7 8 35.20	10.249	22 31 3.3	16.77	15 46.19	68.48	4 41.60	0.393	
Tues.	9	7 12 41.02	10.232	22 24 9.0	17.74	15 46.22	68.43	4 50.84	0.376	
Wed.	10	7 16 46.41	10.214	22 16 51.4	18.70	15 46.26	68.37	4 59.65	0.358	
Thur.	11	7 20 51.37	10.196	22 9 10.7	19.66	15 46.30	68.31	5 8.03	0.340	
Fri.	12	7 24 55.88	10.177	22 1 7.3	20.61	15 46.34	68.25	5 15.97	0.321	
Sat.	13	7 28 59.92	10.157	21 52 41.3	21.55	15 46.39	68.19	5 23.43	0.301	
Sun.	14	7 33 3.47	10.137	21 43 52.9	22.48	15 46.44	68.12	5 30.40	0.281	
Mon.	15	7 37 6.53	10.116	21 34 42.2	23.40	15 46.50	68.05	5 36.89	0.260	
Tues.	16	7 41 9.08	10.095	21 25 9.4	24.31	15 46.56	67.98	5 42.87	0.239	
Wed.	17	7 45 11.13	10.074	21 15 14.7	25.22	15 46.62	67.90	5 48.35	0.217	
Thur.	18	7 49 12.66	10.053	21 4 58.2	26.12	15 46.68	67.83	5 53.31	0.196	
Fri.	19	7 53 13.67	10.031	20 54 20.3	27.01	15 46.75	67.75	5 57.75	0.174	
Sat.	20	7 57 14.14	10.009	20 43 21.3	27.89	15 46.82	67.67	6 1.65	0.152	
Sun.	21	8 1 14.08	9.986	20 32 1.4	28.76	15 46.89	67.59	6 5.01	0.129	
Mon.	22	8 5 13.47	9.963	20 20 20.6	29.62	15 46.97	67.51	6 7.84	0.106	
Tues.	23	8 9 12.31	9.940	20 8 19.3	30.47	15 47.05	67.43	6 10.13	0.083	
Wed.	24	8 13 10.59	9.917	19 55 57.9	31.30	15 47.14	67.35	6 11.85	0.060	
Thur.	25	8 17 8.30	9.893	19 43 16.6	32.13	15 47.23	67.26	6 13.00	0.036	
Fri.	26	8 21 5.44	9.869	19 30 15.4	32.94	15 47.32	67.18	6 13.58	0.012	
Sat.	27	8 25 2.00	9.845	19 16 54.8	33.75	15 47.42	67.09	6 13.59	0.012	
Sun.	28	8 28 57.97	9.821	19 3 15.0	34.55	15 47.53	67.01	6 13.01	0.036	
Mon.	29	8 32 53.37	9.796	18 49 16.3	35.33	15 47.64	66.92	6 11.85	0.060	
Tues.	30	8 36 48.18	9.771	18 34 59.1	36.10	15 47.75	66.84	6 10.11	0.085	
Wed.	31	8 40 42.39	9.746	18 20 23.6	36.86	15 47.87	66.75	6 7.78	0.110	
Thur.	32	8 44 36.00	9.721	N. 18 5 30.1	37.61	15 48.00	66.67	6 4.84	0.135	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
		^h ^m ^s	^s	N. [°] ['] ["]	^s	^m ^s	^s	^h ^m ^s
Mon.	1	6 39 43.63	10.346	N. 23 8 22.0	9.82	3 26.70	0.489	6 36 16.93
Tues.	2	6 43 51.81	10.335	23 4 14.3	10.83	3 38.32	0.479	6 40 13.49
Wed.	3	6 47 59.72	10.323	22 59 42.4	11.83	3 49.68	0.467	6 44 10.04
Thur.	4	6 52 7.34	10.310	22 54 46.4	12.83	4 0.74	0.454	6 48 6.60
Fri.	5	6 56 14.64	10.296	22 49 26.5	13.83	4 11.48	0.440	6 52 3.16
Sat.	6	7 0 21.60	10.282	22 43 42.8	14.81	4 21.89	0.425	6 55 59.71
Sun.	7	7 4 28.19	10.266	22 37 35.4	15.80	4 31.92	0.409	6 59 56.27
Mon.	8	7 8 34.40	10.249	22 31 4.6	16.77	4 41.57	0.393	7 3 52.83
Tues.	9	7 12 40.19	10.232	22 24 10.4	17.74	4 50.81	0.376	7 7 49.38
Wed.	10	7 16 45.56	10.214	22 16 52.9	18.70	4 59.62	0.358	7 11 45.94
Thur.	11	7 20 50.50	10.196	22 9 12.4	19.66	5 8.00	0.340	7 15 42.50
Fri.	12	7 24 54.99	10.177	22 1 9.2	20.61	5 15.94	0.321	7 19 39.05
Sat.	13	7 28 59.01	10.157	21 52 43.4	21.55	5 23.40	0.301	7 23 35.61
Sun.	14	7 33 2.54	10.137	21 43 55.0	22.48	5 30.37	0.281	7 27 32.17
Mon.	15	7 37 5.58	10.116	21 34 44.4	23.40	5 36.86	0.260	7 31 28.72
Tues.	16	7 41 8.12	10.095	21 25 11.7	24.31	5 42.84	0.239	7 35 25.28
Wed.	17	7 45 10.15	10.074	21 15 17.1	25.22	5 48.32	0.217	7 39 21.83
Thur.	18	7 49 11.67	10.053	21 5 0.8	26.12	5 53.28	0.196	7 43 18.39
Fri.	19	7 53 12.67	10.031	20 54 23.0	27.01	5 57.72	0.174	7 47 14.95
Sat.	20	7 57 13.13	10.009	20 43 24.1	27.89	6 1.63	0.152	7 51 11.50
Sun.	21	8 1 13.06	9.986	20 32 4.4	28.76	6 5.00	0.129	7 55 8.06
Mon.	22	8 5 12.45	9.963	20 20 23.7	29.62	6 7.84	0.106	7 59 4.61
Tues.	23	8 9 11.29	9.940	20 8 22.5	30.47	6 10.12	0.083	8 3 1.17
Wed.	24	8 13 9.57	9.917	19 56 1.2	31.30	6 11.84	0.060	8 6 57.73
Thur.	25	8 17 7.28	9.893	19 43 19.9	32.13	6 13.00	0.036	8 10 54.28
Fri.	26	8 21 4.42	9.869	19 30 18.8	32.94	6 13.58	0.012	8 14 50.84
Sat.	27	8 25 0.98	9.845	19 16 58.3	33.75	6 13.59	0.012	8 18 47.39
Sun.	28	8 28 56.96	9.821	19 3 18.6	34.55	6 13.01	0.036	8 22 43.95
Mon.	29	8 32 52.36	9.796	18 49 20.0	35.33	6 11.86	0.060	8 26 40.50
Tues.	30	8 36 47.18	9.771	18 35 2.8	36.10	6 10.12	0.085	8 30 37.06
Wed.	31	8 40 41.40	9.746	18 20 27.3	36.86	6 7.79	0.110	8 34 33.61
Thur.	32	8 44 35.01	9.721	N. 18 5 33.8	37.61	6 4.85	0.135	8 38 30.16

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	182	99° 7' 52.3	7' 30.7	143.04	—0.33	0.0072352	1.5	17 ^h 20 ^m 52.07
2	183	100 5 5.4	4 43.6	143.04	0.28	.0072376	0.4	17 16 56.17
3	184	101 2 18.4	1 56.4	143.04	0.21	.0072373	0.7	17 13 0.26
4	185	101 59 31.4	59 9.2	143.04	—0.12	.0072343	1.8	17 9 4.35
5	186	102 56 44.2	56 21.9	143.03	0.00	.0072288	2.8	17 5 8.44
6	187	103 53 56.8	53 34.4	143.03	+0.13	.0072208	3.8	17 1 12.53
7	188	104 51 9.4	50 46.8	143.02	0.26	.0072104	4.7	16 57 16.62
8	189	105 48 21.8	47 59.0	143.02	0.39	.0071977	5.7	16 53 20.71
9	190	106 45 34.2	45 11.2	143.02	0.51	.0071829	6.6	16 49 24.80
10	191	107 42 46.5	42 23.4	143.02	0.62	.0071661	7.4	16 45 28.88
11	192	108 39 58.8	39 35.6	143.01	0.71	.0071473	8.2	16 41 32.97
12	193	109 37 11.1	36 47.7	143.01	0.76	.0071268	8.9	16 37 37.06
13	194	110 34 23.5	33 59.9	143.02	0.77	.0071046	9.6	16 33 41.15
14	195	111 31 36.0	31 12.2	143.03	0.75	.0070808	10.2	16 29 45.25
15	196	112 28 48.8	28 24.9	143.04	0.71	.0070555	10.8	16 25 49.34
16	197	113 26 2.0	25 38.0	143.05	0.65	.0070288	11.4	16 21 53.43
17	198	114 23 15.6	22 51.5	143.07	0.56	.0070008	11.9	16 17 57.51
18	199	115 20 29.6	20 5.3	143.09	0.45	.0069714	12.5	16 14 1.60
19	200	116 17 44.2	17 19.7	143.12	0.33	.0069407	13.1	16 10 5.69
20	201	117 14 59.6	14 35.0	143.15	0.20	.0069086	13.7	16 6 9.78
21	202	118 12 15.6	11 50.9	143.18	+0.06	.0068749	14.4	16 2 13.88
22	203	119 9 32.4	9 7.6	143.22	—0.07	.0068395	15.1	15 58 17.96
23	204	120 6 50.1	6 25.1	143.26	0.19	.0068023	15.9	15 54 22.05
24	205	121 4 8.8	3 43.6	143.30	0.29	.0067631	16.7	15 50 26.14
25	206	122 1 28.4	1 3.1	143.34	0.37	.0067220	17.6	15 46 30.23
26	207	122 58 49.1	58 23.7	143.38	0.42	.0066788	18.5	15 42 34.32
27	208	123 56 10.8	55 45.3	143.42	0.44	.0066334	19.4	15 38 38.41
28	209	124 53 33.4	53 7.7	143.46	0.42	.0065857	20.3	15 34 42.50
29	210	125 50 57.0	50 31.1	143.50	0.37	.0065357	21.3	15 30 46.59
30	211	126 48 21.5	47 55.5	143.54	0.30	.0064833	22.4	15 26 50.69
31	212	127 45 46.9	45 20.8	143.58	0.21	.0064283	23.4	15 22 54.78
32	213	128 43 13.2	42 47.0	143.62	—0.11	0.0063709	24.4	15 18 58.87

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMI-DIAMETER.

HORIZONTAL PARALLAX.

MERIDIAN PASSAGE.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 hour.

Midnight.

Diff. for
1 hour.Diff. for
1 hour.h m
δm
d

Day of the Month.	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.	h m δ	m	d
1	16 44.9	16 44.6	61 21.7	+0.12	61 20.6	-0.30	0 39.3	2.59	28.9
2	16 43.0	16 40.0	61 14.6	-0.70	61 3.7	1.09	1 40.4	2.48	0.6
3	16 35.9	16 30.6	60 48.4	1.43	60 29.3	1.73	2 38.3	2.34	1.6
4	16 24.5	16 17.7	60 6.9	1.98	59 41.8	2.17	3 32.7	2.30	2.6
5	16 10.4	16 2.7	59 14.8	2.29	58 46.7	2.36	4 23.8	2.07	3.6
6	15 54.9	15 47.2	58 18.1	2.38	57 49.5	2.36	5 12.3	1.98	4.6
7	15 39.6	15 32.2	57 21.6	2.29	56 54.7	2.18	5 59.0	1.92	5.6
8	15 25.3	15 18.8	56 29.2	2.05	56 5.5	1.90	6 44.7	1.90	6.6
9	15 12.9	15 7.5	55 43.7	1.73	55 23.9	1.56	7 30.1	1.90	7.6
10	15 2.7	14 58.4	55 6.2	1.39	54 50.6	1.21	8 15.7	1.91	8.6
11	14 54.8	14 51.7	54 37.2	1.03	54 25.9	0.85	9 1.9	1.94	9.6
12	14 49.2	14 47.3	54 16.7	0.68	54 9.6	0.52	9 48.7	1.96	10.6
13	14 45.8	14 44.9	54 4.3	0.36	54 0.9	-0.21	10 36.1	1.98	11.6
14	14 44.4	14 44.4	53 59.2	-0.06	53 59.0	+0.05	11 23.6	1.98	12.6
15	14 44.8	14 45.5	54 0.4	+0.17	54 3.1	0.28	12 10.9	1.96	13.6
16	14 46.6	14 48.1	54 7.2	0.39	54 12.5	0.49	12 57.8	1.94	14.6
17	14 49.8	14 51.9	54 19.0	0.59	54 26.8	0.69	13 44.1	1.92	15.6
18	14 54.4	14 57.1	54 35.6	0.79	54 45.7	0.89	14 29.8	1.90	16.6
19	15 0.2	15 3.6	54 57.0	0.99	55 9.6	1.10	15 15.3	1.90	17.6
20	15 7.4	15 11.5	55 23.4	1.21	55 38.5	1.31	16 1.1	1.92	18.6
21	15 16.0	15 20.8	55 55.0	1.42	56 12.6	1.52	16 47.7	1.97	19.6
22	15 25.9	15 31.3	56 31.4	1.62	56 51.5	1.72	17 36.0	2.06	20.6
23	15 37.1	15 43.1	57 12.6	1.80	57 34.7	1.87	18 26.7	2.18	21.6
24	15 49.3	15 55.6	57 57.4	1.92	58 20.7	1.94	19 20.5	2.31	22.6
25	16 2.0	16 8.3	58 44.1	1.94	59 7.2	1.90	20 17.6	2.44	23.6
26	16 14.4	16 20.1	59 29.6	1.81	59 50.7	1.68	21 17.6	2.54	24.6
27	16 25.4	16 29.9	60 9.9	1.50	60 26.6	1.27	22 19.3	2.58	25.6
28	16 33.7	16 36.4	60 40.3	1.00	60 50.6	+0.69	23 20.9	2.54	26.6
29	16 38.2	16 38.7	60 56.9	+0.35	60 58.9	-0.01	0 20.8	2.44	27.6
30	16 38.1	16 36.2	60 56.5	-0.38	60 49.7	0.75	1 18.0	2.32	28.6
31	16 33.2	16 29.0	60 38.6	1.10	60 23.4	1.42			0.8
32	16 23.9	16 17.9	60 4.6	-1.70	59 42.6	-1.93			1.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 1.					WEDNESDAY 3.				
0	6 13 42.78	2.6630	N.18° 34' 44.8"	0.043	0	8 20 31.38	2.5596	N.15° 59' 59.8"	6.314
1	6 16 23.77	2.6333	18 34 43.1	0.099	1	8 23 4.82	2.5548	15 53 43.8	6.321
2	6 19 4.76	2.6833	18 34 32.9	0.341	2	8 25 37.96	2.5499	15 47 21.3	6.437
3	6 21 45.75	2.6833	18 34 14.2	0.383	3	8 28 10.81	2.5460	15 40 52.5	6.483
4	6 24 26.74	2.6830	18 33 47.0	0.535	4	8 30 43.36	2.5400	15 34 17.5	6.535
5	6 27 7.71	2.6836	18 33 11.3	0.666	5	8 33 15.61	2.5350	15 27 36.3	6.737
6	6 29 48.65	2.6821	18 32 27.1	0.808	6	8 35 47.56	2.5299	15 20 49.1	6.838
7	6 32 29.56	2.6814	18 31 34.4	0.949	7	8 38 19.20	2.5248	15 13 55.8	6.987
8	6 35 10.42	2.6807	18 30 33.2	1.090	8	8 40 50.53	2.5196	15 6 56.6	7.085
9	6 37 51.24	2.6799	18 29 23.6	1.231	9	8 43 21.55	2.5143	14 59 51.6	7.133
10	6 40 32.01	2.6790	18 28 5.5	1.371	10	8 45 52.25	2.5091	14 52 40.8	7.296
11	6 43 12.71	2.6778	18 26 39.0	1.511	11	8 48 22.64	2.5038	14 45 24.3	7.322
12	6 45 53.34	2.6765	18 25 4.1	1.652	12	8 50 52.70	2.4984	14 38 2.2	7.414
13	6 48 33.89	2.6752	18 23 20.7	1.792	13	8 53 22.44	2.4930	14 30 34.6	7.506
14	6 51 14.36	2.6737	18 21 29.0	1.931	14	8 55 51.86	2.4877	14 23 1.6	7.598
15	6 53 54.74	2.6731	18 19 29.0	2.070	15	8 58 20.96	2.4823	14 15 23.2	7.684
16	6 56 35.01	2.6703	18 17 20.6	2.208	16	9 0 49.73	2.4768	14 7 39.5	7.771
17	6 59 15.18	2.6686	18 15 3.9	2.346	17	9 3 18.18	2.4713	13 59 50.6	7.867
18	7 1 55.23	2.6665	18 12 39.0	2.483	18	9 5 46.29	2.4658	13 51 56.7	7.941
19	7 4 35.16	2.6644	18 10 5.9	2.620	19	9 8 14.07	2.4603	13 43 57.7	8.024
20	7 7 14.96	2.6622	18 7 24.6	2.756	20	9 10 41.52	2.4548	13 35 53.8	8.106
21	7 9 54.63	2.6599	18 4 35.1	2.892	21	9 13 8.64	2.4492	13 27 45.0	8.186
22	7 12 34.15	2.6575	18 1 37.5	3.027	22	9 15 35.42	2.4436	13 19 31.5	8.264
23	7 15 13.53	2.6550	N.17° 58' 31.9"	3.161	23	9 18 1.87	2.4380	N.13° 11' 13.3"	8.341
TUESDAY 2.					THURSDAY 4.				
0	7 17 52.75	2.6522	N.17° 55' 18.2"	3.295	0	9 20 27.98	2.4324	N.13° 2' 50.6"	8.417
1	7 20 31.81	2.6496	17 51 56.5	3.428	1	9 22 53.75	2.4268	12 54 23.4	8.491
2	7 23 10.69	2.6466	17 48 26.9	3.559	2	9 25 19.19	2.4212	12 45 51.7	8.564
3	7 25 49.40	2.6436	17 44 49.4	3.690	3	9 27 44.29	2.4156	12 37 15.7	8.636
4	7 28 27.92	2.6405	17 41 4.1	3.820	4	9 30 9.06	2.4100	12 28 35.5	8.706
5	7 31 6.26	2.6373	17 37 11.0	3.950	5	9 32 33.49	2.4043	12 19 51.1	8.774
6	7 33 44.40	2.6340	17 33 10.1	4.079	6	9 34 57.58	2.3987	12 11 2.6	8.841
7	7 36 22.34	2.6307	17 29 1.6	4.206	7	9 37 21.33	2.3931	12 2 10.2	8.907
8	7 39 0.08	2.6272	17 24 45.4	4.332	8	9 39 44.75	2.3875	11 53 13.8	8.971
9	7 41 37.60	2.6236	17 20 21.7	4.458	9	9 42 7.83	2.3819	11 44 13.6	9.034
10	7 44 14.91	2.6199	17 15 50.4	4.583	10	9 44 30.58	2.3763	11 35 9.7	9.096
11	7 46 51.99	2.6161	17 11 11.7	4.707	11	9 46 52.99	2.3708	11 26 2.1	9.156
12	7 49 28.84	2.6122	17 6 25.6	4.830	12	9 49 15.07	2.3652	11 16 51.0	9.215
13	7 52 5.45	2.6083	17 1 32.2	4.951	13	9 51 36.81	2.3596	11 7 36.3	9.273
14	7 54 41.83	2.6043	16 56 31.5	5.071	14	9 53 58.22	2.3541	10 58 18.3	9.329
15	7 57 17.96	2.6002	16 51 23.6	5.191	15	9 56 19.30	2.3486	10 48 57.0	9.384
16	7 59 53.85	2.5960	16 46 8.6	5.310	16	9 58 41.05	2.3431	10 39 32.4	9.437
17	8 2 29.48	2.5917	16 40 46.5	5.427	17	10 1 1.47	2.3375	10 30 4.6	9.488
18	8 5 4.85	2.5873	16 35 17.4	5.543	18	10 3 21.56	2.3321	10 20 33.8	9.538
19	8 7 39.95	2.5828	16 29 41.4	5.658	19	10 5 41.32	2.3266	10 11 0.0	9.589
20	8 10 14.79	2.5783	16 23 58.5	5.772	20	10 8 0.75	2.3212	10 1 23.1	9.638
21	8 12 49.36	2.5738	16 18 8.8	5.884	21	10 10 19.86	2.3158	9 51 43.6	9.683
22	8 15 23.65	2.5691	16 12 12.4	5.995	22	10 12 38.64	2.3104	9 42 1.3	9.727
23	8 17 57.06	2.5644	16 6 9.4	6.106	23	10 14 57.10	2.3051	9 32 16.4	9.771
24	8 20 31.38	2.5596	N.15° 59' 59.8"	6.214	24	10 17 14.25	2.2998	N. 9° 22' 28.9"	9.814

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
FRIDAY 5.					SUNDAY 7.				
0	10 17 14.25	2.2995	N. 9 22 28.9	9.914	0	12 2 14.82	2.0997	N. 1 4 51.2	10.512
1	10 19 32.06	2.2946	9 12 38.8	9.865	1	12 4 20.35	2.0906	0 54 20.8	10.503
2	10 21 49.59	2.2892	9 2 46.3	9.805	2	12 6 25.69	2.0876	0 43 50.9	10.493
3	10 24 6.79	2.2840	8 52 51.4	9.934	3	12 8 30.85	2.0846	0 33 21.7	10.482
4	10 26 23.67	2.2788	8 42 54.2	9.972	4	12 10 35.84	2.0817	0 22 53.1	10.470
5	10 28 40.24	2.2735	8 32 54.8	10.008	5	12 12 40.66	2.0788	0 12 25.3	10.457
6	10 30 56.50	2.2685	8 22 53.3	10.043	6	12 14 45.30	2.0760	N. 0 1 58.3	10.443
7	10 33 12.46	2.2634	8 12 49.7	10.077	7	12 16 49.78	2.0733	S. 0 8 27.9	10.429
8	10 35 28.11	2.2583	8 2 44.1	10.110	8	12 18 54.09	2.0706	0 18 53.2	10.414
9	10 37 43.46	2.2533	7 52 36.6	10.141	9	12 20 58.24	2.0679	0 29 17.6	10.398
10	10 39 58.51	2.2483	7 42 27.2	10.171	10	12 23 2.24	2.0653	0 39 41.0	10.382
11	10 42 13.26	2.2434	7 32 16.1	10.199	11	12 25 6.09	2.0628	0 50 3.4	10.366
12	10 44 27.72	2.2375	7 22 3.3	10.226	12	12 27 9.78	2.0603	1 0 24.8	10.347
13	10 46 41.89	2.2317	7 11 48.9	10.253	13	12 29 13.32	2.0578	1 10 45.1	10.328
14	10 48 55.76	2.2259	7 1 32.9	10.279	14	12 31 16.72	2.0553	1 21 4.2	10.308
15	10 51 9.35	2.2241	6 51 15.5	10.308	15	12 33 19.98	2.0532	1 31 22.1	10.288
16	10 53 22.65	2.2194	6 40 56.6	10.326	16	12 35 23.10	2.0509	1 41 38.8	10.267
17	10 55 35.67	2.2147	6 30 36.4	10.347	17	12 37 26.08	2.0486	1 51 54.2	10.246
18	10 57 48.41	2.2101	6 20 14.9	10.366	18	12 39 28.93	2.0464	2 2 8.2	10.223
19	11 0 0.88	2.2055	6 9 52.2	10.386	19	12 41 31.65	2.0443	2 12 20.9	10.200
20	11 2 13.07	2.2009	5 59 28.3	10.406	20	12 43 34.25	2.0420	2 22 32.2	10.176
21	11 4 24.99	2.1963	5 49 3.4	10.423	21	12 45 36.73	2.0403	2 32 42.0	10.151
22	11 6 36.63	2.1919	5 38 37.5	10.439	22	12 47 39.08	2.0388	2 42 50.3	10.126
23	11 8 48.01	2.1876	N. 5 28 10.6	10.455	23	12 49 41.32	2.0363	S. 2 52 57.1	10.101
SATURDAY 6.					MONDAY 8.				
0	11 10 59.13	2.1831	N. 5 17 42.9	10.469	0	12 51 43.44	2.0346	S. 3 3 2.4	10.075
1	11 13 9.99	2.1786	5 7 14.4	10.482	1	12 53 45.45	2.0327	3 13 6.1	10.048
2	11 15 20.59	2.1745	4 56 45.1	10.494	2	12 55 47.36	2.0309	3 23 8.2	10.020
3	11 17 30.94	2.1703	4 46 15.1	10.505	3	12 57 49.16	2.0292	3 33 8.6	9.992
4	11 19 41.03	2.1662	4 35 44.5	10.516	4	12 59 50.86	2.0275	3 43 7.2	9.963
5	11 21 50.88	2.1621	4 25 13.4	10.523	5	13 1 52.46	2.0259	3 53 4.1	9.933
6	11 24 0.48	2.1580	4 14 41.7	10.531	6	13 3 53.97	2.0243	4 2 59.2	9.903
7	11 26 9.84	2.1540	4 4 9.6	10.538	7	13 5 55.38	2.0228	4 12 52.5	9.873
8	11 28 18.96	2.1500	3 53 37.1	10.544	8	13 7 56.70	2.0213	4 22 43.9	9.842
9	11 30 27.84	2.1461	3 43 4.3	10.549	9	13 9 57.94	2.0199	4 32 33.4	9.809
10	11 32 36.49	2.1422	3 32 31.2	10.553	10	13 11 59.09	2.0186	4 42 21.0	9.776
11	11 34 44.91	2.1384	3 21 57.9	10.557	11	13 14 0.16	2.0173	4 52 6.6	9.743
12	11 36 53.10	2.1347	3 11 24.4	10.560	12	13 16 1.15	2.0160	5 1 50.2	9.709
13	11 39 1.07	2.1310	3 0 50.9	10.560	13	13 18 2.07	2.0147	5 11 31.7	9.675
14	11 41 8.82	2.1273	2 50 17.3	10.560	14	13 20 2.91	2.0136	5 21 11.2	9.640
15	11 43 16.35	2.1237	2 39 43.7	10.560	15	13 22 3.68	2.0123	5 30 48.5	9.604
16	11 45 23.66	2.1201	2 29 10.2	10.558	16	13 24 4.39	2.0113	5 40 23.7	9.568
17	11 47 30.76	2.1166	2 18 36.8	10.555	17	13 26 5.03	2.0102	5 49 56.7	9.532
18	11 49 37.65	2.1132	2 8 3.6	10.551	18	13 28 5.61	2.0092	5 59 27.5	9.495
19	11 51 44.34	2.1098	1 57 30.7	10.547	19	13 30 6.13	2.0083	6 8 56.0	9.457
20	11 53 50.83	2.1065	1 46 58.0	10.542	20	13 32 6.60	2.0073	6 18 22.3	9.418
21	11 55 57.12	2.1032	1 36 25.7	10.536	21	13 34 7.01	2.0064	6 27 46.2	9.379
22	11 58 3.21	2.1000	1 25 53.7	10.529	22	13 36 7.37	2.0056	6 37 7.8	9.340
23	12 0 9.11	2.0968	1 15 22.2	10.521	23	13 38 7.68	2.0048	6 46 27.0	9.300
24	12 2 14.82	2.0937	N. 1 4 51.2	10.512	24	13 40 7.94	2.0040	S. 6 55 43.8	9.259

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 9.					THURSDAY 11.				
0	13 40 7.94	2.0040	S. 6° 55' 43.8	9.280	0	15 16 10.53	2.0007	S. 13° 24' 1.6	6.741
1	13 42 8.16	2.0033	7 4 58.1	9.218	1	15 18 11.14	2.0105	13 30 44.2	6.677
2	13 44 8.34	2.0027	7 14 10.0	9.177	2	15 20 11.79	2.0113	13 37 22.9	6.614
3	13 46 8.48	2.0021	7 23 19.4	9.135	3	15 22 12.49	2.0125	13 43 57.8	6.550
4	13 48 8.59	2.0015	7 32 26.2	9.093	4	15 24 13.25	2.0130	13 50 28.9	6.486
5	13 50 8.66	2.0009	7 41 30.5	9.049	5	15 26 14.05	2.0130	13 56 56.1	6.421
6	13 52 8.70	2.0004	7 50 32.1	9.005	6	15 28 14.91	2.0146	14 3 19.4	6.356
7	13 54 8.71	2.0000	7 59 31.1	8.961	7	15 30 15.81	2.0155	14 9 38.7	6.290
8	13 56 8.70	1.9996	8 8 27.4	8.916	8	15 32 16.77	2.0164	14 15 54.1	6.223
9	13 58 8.66	1.9992	8 17 21.0	8.871	9	15 34 17.78	2.0173	14 22 5.5	6.157
10	14 0 8.60	1.9989	8 26 11.9	8.825	10	15 36 18.84	2.0182	14 28 12.9	6.090
11	14 2 8.52	1.9986	8 35 0.0	8.779	11	15 38 19.96	2.0192	14 34 16.3	6.023
12	14 4 8.43	1.9983	8 43 45.4	8.733	12	15 40 21.14	2.0201	14 40 15.8	5.956
13	14 6 8.32	1.9981	8 52 27.9	8.685	13	15 42 22.37	2.0210	14 46 11.1	5.887
14	14 8 8.20	1.9979	9 1 7.6	8.637	14	15 44 23.66	2.0220	14 52 2.3	5.819
15	14 10 8.07	1.9976	9 9 44.4	8.589	15	15 46 25.01	2.0229	14 57 49.4	5.750
16	14 12 7.93	1.9976	9 18 18.3	8.540	16	15 48 26.42	2.0238	15 3 32.3	5.681
17	14 14 7.78	1.9975	9 26 49.2	8.491	17	15 50 27.89	2.0246	15 9 11.1	5.613
18	14 16 7.63	1.9975	9 35 17.2	8.441	18	15 52 29.41	2.0255	15 14 45.7	5.543
19	14 18 7.48	1.9975	9 43 42.2	8.391	19	15 54 30.99	2.0265	15 20 16.1	5.473
20	14 20 7.33	1.9975	9 52 4.1	8.340	20	15 56 32.63	2.0275	15 25 42.3	5.401
21	14 22 7.18	1.9975	10 0 23.0	8.289	21	15 58 34.33	2.0285	15 31 4.2	5.330
22	14 24 7.03	1.9975	10 8 36.8	8.238	22	16 0 36.10	2.0295	15 36 21.9	5.258
23	14 26 6.89	1.9975	S. 10 16 51.5	8.186	23	16 2 37.92	2.0305	S. 15 41 35.3	5.187
WEDNESDAY 10.					FRIDAY 12.				
0	14 28 6.76	1.9975	S. 10 25 1.1	8.134	0	16 4 39.81	2.0319	S. 15 46 44.3	5.115
1	14 30 6.64	1.9981	10 33 7.5	8.081	1	16 6 41.76	2.0330	15 51 49.0	5.043
2	14 32 6.53	1.9983	10 41 10.8	8.027	2	16 8 43.77	2.0340	15 56 49.4	4.970
3	14 34 6.44	1.9986	10 49 10.8	7.973	3	16 10 45.84	2.0350	16 1 45.4	4.897
4	14 36 6.36	1.9988	10 57 7.6	7.919	4	16 12 47.97	2.0361	16 6 37.0	4.824
5	14 38 6.30	1.9991	11 5 1.1	7.865	5	16 14 50.17	2.0372	16 11 24.2	4.750
6	14 40 6.25	1.9994	11 12 51.4	7.810	6	16 16 52.43	2.0382	16 16 7.0	4.676
7	14 42 6.23	1.9996	11 20 38.3	7.754	7	16 18 54.75	2.0393	16 20 45.3	4.601
8	14 44 6.23	2.0001	11 28 21.9	7.698	8	16 20 57.13	2.0402	16 25 19.1	4.527
9	14 46 6.26	2.0007	11 36 2.1	7.643	9	16 22 59.57	2.0413	16 29 48.5	4.452
10	14 48 6.31	2.0011	11 43 38.9	7.586	10	16 25 2.08	2.0423	16 34 13.4	4.377
11	14 50 6.39	2.0016	11 51 12.3	7.527	11	16 27 4.65	2.0433	16 38 33.7	4.301
12	14 52 6.49	2.0020	11 58 42.2	7.469	12	16 29 7.28	2.0443	16 42 49.5	4.226
13	14 54 6.62	2.0025	12 6 8.6	7.411	13	16 31 9.97	2.0454	16 47 0.7	4.149
14	14 56 6.79	2.0031	12 13 31.5	7.352	14	16 33 12.73	2.0464	16 51 7.4	4.073
15	14 58 6.99	2.0037	12 20 50.9	7.293	15	16 35 15.54	2.0474	16 55 9.5	3.996
16	15 0 7.23	2.0043	12 28 6.7	7.233	16	16 37 18.42	2.0484	16 59 6.9	3.919
17	15 2 7.50	2.0048	12 35 18.9	7.173	17	16 39 21.35	2.0494	17 2 59.7	3.841
18	15 4 7.81	2.0055	12 42 27.5	7.113	18	16 41 24.35	2.0504	17 6 47.8	3.764
19	15 6 8.16	2.0062	12 49 32.4	7.052	19	16 43 27.41	2.0514	17 10 31.3	3.686
20	15 8 8.55	2.0068	12 56 33.7	6.990	20	16 45 30.52	2.0524	17 14 10.1	3.608
21	15 10 8.98	2.0075	13 3 31.3	6.928	21	16 47 33.69	2.0533	17 17 44.1	3.529
22	15 12 9.45	2.0082	13 10 25.1	6.865	22	16 49 36.92	2.0543	17 21 13.4	3.450
23	15 14 9.97	2.0090	13 17 15.2	6.804	23	16 51 40.21	2.0553	17 24 38.0	3.371
24	15 16 10.53	2.0097	S. 13 24 1.6	6.741	24	16 53 43.56	2.0563	S. 17 27 58.0	3.292

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 13.					MONDAY 15.				
0	16 53 43.56	2.0663	S. 17° 27' 58.0	3.292	0	18 33 13.31	2.0618	S. 18° 30' 57.4	0.713
1	16 55 46.96	2.0673	17 31 13.1	3.213	1	18 35 18.22	2.0618	18 30 12.0	0.798
2	16 57 50.42	2.0681	17 34 23.5	3.133	2	18 37 23.13	2.0618	18 29 21.6	0.883
3	16 59 53.93	2.0690	17 37 29.1	3.053	3	18 39 28.04	2.0618	18 28 26.0	0.969
4	17 1 57.50	2.0699	17 40 29.8	2.973	4	18 41 32.94	2.0617	18 27 25.3	1.054
5	17 4 1.12	2.0698	17 43 25.7	2.893	5	18 43 37.84	2.0616	18 26 19.5	1.139
6	17 6 4.80	2.0617	17 46 16.8	2.811	6	18 45 42.73	2.0615	18 25 8.6	1.224
7	17 8 8.52	2.0625	17 49 3.0	2.730	7	18 47 47.61	2.0613	18 23 52.6	1.309
8	17 10 12.30	2.0634	17 51 44.3	2.649	8	18 49 52.48	2.0611	18 22 31.5	1.394
9	17 12 16.13	2.0643	17 54 20.8	2.568	9	18 51 57.34	2.0609	18 21 5.3	1.480
10	17 14 20.01	2.0650	17 56 52.4	2.486	10	18 54 2.19	2.0607	18 19 34.1	1.565
11	17 16 23.94	2.0658	17 59 19.1	2.404	11	18 56 7.03	2.0605	18 17 57.8	1.651
12	17 18 27.91	2.0666	18 1 40.8	2.322	12	18 58 11.85	2.0603	18 16 16.4	1.736
13	17 20 31.93	2.0674	18 3 57.6	2.239	13	19 0 16.66	2.0600	18 14 30.0	1.819
14	17 22 36.00	2.0681	18 6 9.5	2.157	14	19 2 21.45	2.0797	18 12 38.5	1.903
15	17 24 40.11	2.0688	18 8 16.5	2.074	15	19 4 26.22	2.0793	18 10 42.0	1.987
16	17 26 44.26	2.0696	18 10 18.5	1.991	16	19 6 30.97	2.0790	18 8 40.4	2.071
17	17 28 48.46	2.0703	18 12 15.5	1.908	17	19 8 35.70	2.0786	18 6 33.8	2.155
18	17 30 52.70	2.0710	18 14 7.5	1.825	18	19 10 40.40	2.0783	18 4 22.2	2.239
19	17 32 56.98	2.0717	18 15 54.5	1.743	19	19 12 45.08	2.0778	18 2 5.5	2.324
20	17 35 1.30	2.0734	18 17 36.6	1.659	20	19 14 49.74	2.0774	17 59 43.9	2.406
21	17 37 5.66	2.0730	18 19 13.6	1.575	21	19 16 54.37	2.0769	17 57 17.3	2.488
22	17 39 10.06	2.0736	18 20 45.6	1.493	22	19 18 58.97	2.0764	17 54 45.7	2.571
23	17 41 14.49	2.0743	S. 18° 22' 12.6	1.408	23	19 21 3.54	2.0760	S. 17° 52' 9.1	2.654
SUNDAY 14.					TUESDAY 16.				
0	17 43 18.96	2.0748	S. 18° 23' 34.5	1.324	0	19 23 8.08	2.0764	S. 17° 49' 27.6	2.737
1	17 45 23.46	2.0753	18 24 51.4	1.240	1	19 25 12.59	2.0748	17 46 41.1	2.819
2	17 47 28.00	2.0758	18 26 3.3	1.156	2	19 27 17.06	2.0743	17 43 49.7	2.901
3	17 49 32.56	2.0763	18 27 10.1	1.071	3	19 29 21.50	2.0737	17 40 53.3	2.983
4	17 51 37.16	2.0768	18 28 11.8	0.987	4	19 31 25.90	2.0731	17 37 52.1	3.063
5	17 53 41.79	2.0773	18 29 8.5	0.903	5	19 33 30.26	2.0734	17 34 45.9	3.144
6	17 55 46.44	2.0778	18 30 0.1	0.818	6	19 35 34.59	2.0718	17 31 34.9	3.226
7	17 57 51.12	2.0792	18 30 46.6	0.733	7	19 37 38.88	2.0713	17 28 19.0	3.306
8	17 59 55.82	2.0796	18 31 28.1	0.648	8	19 39 43.13	2.0706	17 24 58.2	3.387
9	18 2 0.54	2.0799	18 32 4.4	0.563	9	19 41 47.34	2.0699	17 21 32.6	3.467
10	18 4 5.29	2.0793	18 32 35.7	0.479	10	19 43 51.50	2.0691	17 18 2.1	3.548
11	18 6 10.06	2.0797	18 33 1.9	0.394	11	19 45 55.62	2.0683	17 14 26.8	3.628
12	18 8 14.85	2.0800	18 33 23.0	0.309	12	19 47 59.70	2.0676	17 10 46.7	3.706
13	18 10 19.66	2.0803	18 33 39.0	0.224	13	19 50 3.73	2.0668	17 7 1.8	3.787
14	18 12 24.48	2.0808	18 33 49.9	0.139	14	19 52 7.71	2.0661	17 3 12.2	3.867
15	18 14 29.32	2.0808	18 33 55.7	0.053	15	19 54 11.65	2.0653	16 59 17.8	3.946
16	18 16 34.17	2.0810	18 33 56.3	0.032	16	19 56 15.54	2.0645	16 55 18.7	4.026
17	18 18 39.03	2.0812	18 33 51.9	0.117	17	19 58 19.38	2.0636	16 51 14.9	4.103
18	18 20 43.91	2.0814	18 33 42.3	0.203	18	20 0 23.17	2.0628	16 47 6.4	4.181
19	18 22 48.80	2.0816	18 33 27.6	0.287	19	20 2 26.91	2.0619	16 42 53.2	4.259
20	18 24 53.69	2.0816	18 33 7.8	0.373	20	20 4 30.60	2.0611	16 38 35.3	4.336
21	18 26 58.59	2.0817	18 32 42.9	0.458	21	20 6 34.24	2.0603	16 34 12.8	4.413
22	18 29 3.49	2.0817	18 32 12.8	0.543	22	20 8 37.83	2.0593	16 29 45.7	4.490
23	18 31 8.40	2.0818	18 31 37.6	0.628	23	20 10 41.35	2.0584	16 25 14.0	4.567
24	18 33 13.31	2.0818	S. 18° 30' 57.4	0.713	24	20 12 44.83	2.0575	S. 16° 20' 37.7	4.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 17.					FRIDAY 19.				
0	20 12 44.83	2.0575	S. 16° 20' 37.7	4.643	0	21 50 23.14	2.0121	S. 11° 17' 22.5	7.831
1	20 14 48.25	2.0566	16 15 56.8	4.719	1	21 52 23.85	2.0114	11 9 31.6	7.876
2	20 16 51.62	2.0557	16 11 11.4	4.798	2	21 54 24.51	2.0106	11 1 37.5	7.920
3	20 18 54.93	2.0547	16 6 21.4	4.870	3	21 56 25.13	2.0099	10 53 40.1	7.963
4	20 20 58.18	2.0538	16 1 27.0	4.946	4	21 58 25.70	2.0092	10 45 39.6	8.025
5	20 23 1.38	2.0528	15 56 28.0	5.020	5	22 0 26.23	2.0086	10 37 35.9	8.087
6	20 25 4.52	2.0518	15 51 24.6	5.094	6	22 2 26.73	2.0079	10 29 29.1	8.130
7	20 27 7.60	2.0508	15 46 16.7	5.167	7	22 4 27.19	2.0073	10 21 19.2	8.190
8	20 29 10.62	2.0499	15 41 4.5	5.241	8	22 6 27.61	2.0067	10 13 6.2	8.241
9	20 31 13.58	2.0489	15 35 47.8	5.314	9	22 8 28.00	2.0063	10 4 50.2	8.291
10	20 33 16.49	2.0479	15 30 26.8	5.387	10	22 10 28.35	2.0060	9 56 31.3	8.341
11	20 35 19.34	2.0469	15 25 1.4	5.459	11	22 12 28.67	2.0061	9 48 9.4	8.390
12	20 37 22.12	2.0459	15 19 31.7	5.531	12	22 14 28.96	2.0046	9 39 44.5	8.430
13	20 39 24.85	2.0449	15 13 57.7	5.603	13	22 16 29.22	2.0041	9 31 16.7	8.487
14	20 41 27.51	2.0439	15 8 19.4	5.674	14	22 18 29.45	2.0037	9 22 46.1	8.534
15	20 43 30.12	2.0429	15 2 36.9	5.744	15	22 20 29.66	2.0033	9 14 12.7	8.581
16	20 45 32.66	2.0419	14 56 50.1	5.814	16	22 22 29.84	2.0028	9 5 36.5	8.627
17	20 47 35.15	2.0409	14 50 55.1	5.884	17	22 24 30.00	2.0024	8 56 57.5	8.673
18	20 49 37.57	2.0399	14 45 4.0	5.953	18	22 26 30.13	2.0021	8 48 15.8	8.718
19	20 51 39.93	2.0388	14 39 4.7	6.022	19	22 28 30.24	2.0018	8 39 31.4	8.764
20	20 53 42.23	2.0378	14 33 1.3	6.091	20	22 30 30.34	2.0015	8 30 44.4	8.806
21	20 55 44.47	2.0368	14 26 53.8	6.159	21	22 32 30.42	2.0012	8 21 54.7	8.848
22	20 57 46.65	2.0358	14 20 42.2	6.228	22	22 34 30.48	2.0010	8 13 2.5	8.891
23	20 59 48.77	2.0348	S. 14° 14' 26.6	6.293	23	22 36 30.53	2.0006	S. 8° 4' 7.7	8.934
THURSDAY 18.					SATURDAY 20.				
0	21 1 50.82	2.0338	S. 14° 8' 7.0	6.360	0	22 38 30.57	2.0006	S. 7° 55' 10.4	8.978
1	21 3 52.82	2.0328	14 1 43.4	6.427	1	22 40 30.60	2.0004	7 46 10.6	9.017
2	21 5 54.76	2.0318	13 55 15.8	6.493	2	22 42 30.62	2.0003	7 37 8.4	9.057
3	21 7 56.64	2.0308	13 48 44.3	6.558	3	22 44 30.64	2.0002	7 28 3.8	9.097
4	21 9 58.46	2.0298	13 42 8.8	6.623	4	22 46 30.65	2.0001	7 18 56.8	9.136
5	21 12 0.22	2.0288	13 35 29.5	6.687	5	22 48 30.66	2.0001	7 9 47.5	9.175
6	21 14 1.92	2.0279	13 28 46.3	6.752	6	22 50 30.67	2.0003	7 0 35.8	9.213
7	21 16 3.56	2.0269	13 21 59.3	6.816	7	22 52 30.68	2.0003	6 51 21.9	9.250
8	21 18 5.15	2.0260	13 15 8.4	6.879	8	22 54 30.70	2.0004	6 42 5.8	9.287
9	21 20 6.68	2.0250	13 8 13.8	6.941	9	22 56 30.73	2.0005	6 32 47.5	9.323
10	21 22 8.15	2.0241	13 1 15.5	7.003	10	22 58 30.76	2.0006	6 23 27.0	9.359
11	21 24 9.56	2.0231	12 54 13.4	7.065	11	23 0 30.80	2.0008	6 14 4.4	9.394
12	21 26 10.92	2.0222	12 47 7.7	7.126	12	23 2 30.86	2.0010	6 4 39.8	9.428
13	21 28 12.22	2.0213	12 39 58.3	7.187	13	23 4 30.93	2.0013	5 55 13.1	9.463
14	21 30 13.47	2.0204	12 32 46.3	7.247	14	23 6 31.02	2.0016	5 45 44.4	9.495
15	21 32 14.67	2.0195	12 25 28.7	7.306	15	23 8 31.12	2.0019	5 36 13.8	9.527
16	21 34 15.81	2.0186	12 18 8.6	7.365	16	23 10 31.25	2.0023	5 26 41.2	9.559
17	21 36 16.90	2.0178	12 10 44.9	7.424	17	23 12 31.40	2.0026	5 17 6.7	9.590
18	21 38 17.94	2.0169	12 3 17.7	7.483	18	23 14 31.58	2.0033	5 7 30.4	9.620
19	21 40 18.93	2.0161	11 55 47.0	7.540	19	23 16 31.79	2.0038	4 57 52.3	9.650
20	21 42 19.87	2.0152	11 48 12.9	7.597	20	23 18 32.03	2.0043	4 48 12.4	9.679
21	21 44 20.76	2.0144	11 40 35.3	7.654	21	23 20 32.30	2.0048	4 38 30.7	9.708
22	21 46 21.60	2.0136	11 32 54.4	7.710	22	23 22 32.61	2.0054	4 28 47.4	9.736
23	21 48 22.39	2.0128	11 25 10.1	7.766	23	23 24 32.95	2.0061	4 19 2.4	9.764
24	21 50 23.14	2.0121	S. 11° 17' 22.5	7.821	24	23 26 33.34	2.0068	S. 4° 9' 15.7	9.791

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 21.					TUESDAY 23.				
0	23 26 33.34	2.0068	S. 4 9 15.7	9.791	0	1 4 32.10	2.0941	N. 3 58 13.0	10.238
1	23 28 33.77	2.0076	3 59 27.5	9.817	1	1 6 37.83	2.0971	4 8 26.8	10.226
2	23 30 34.24	2.0083	3 49 37.7	9.843	2	1 8 43.75	2.1002	4 18 40.0	10.214
3	23 32 34.76	2.0091	3 39 46.4	9.867	3	1 10 49.85	2.1033	4 28 52.5	10.203
4	23 34 35.33	2.0099	3 29 53.7	9.891	4	1 12 56.14	2.1065	4 39 4.3	10.191
5	23 36 35.95	2.0108	3 19 59.5	9.914	5	1 15 2.62	2.1097	4 49 15.3	10.177
6	23 38 36.63	2.0118	3 10 4.0	9.936	6	1 17 9.30	2.1129	4 59 25.5	10.162
7	23 40 37.37	2.0128	3 0 7.1	9.958	7	1 19 16.17	2.1162	5 9 34.8	10.147
8	23 42 38.17	2.0138	2 50 9.0	9.979	8	1 21 23.24	2.1196	5 19 43.1	10.130
9	23 44 39.03	2.0149	2 40 9.6	10.000	9	1 23 30.52	2.1230	5 29 50.4	10.113
10	23 46 39.96	2.0161	2 30 9.0	10.020	10	1 25 38.00	2.1264	5 39 56.7	10.096
11	23 48 40.96	2.0173	2 20 7.2	10.040	11	1 27 45.69	2.1299	5 50 1.9	10.077
12	23 50 42.03	2.0186	2 10 4.2	10.059	12	1 29 53.59	2.1335	6 0 5.9	10.058
13	23 52 43.17	2.0197	2 0 0.1	10.077	13	1 32 1.71	2.1371	6 10 8.7	10.037
14	23 54 44.39	2.0210	1 49 55.1	10.094	14	1 34 10.04	2.1408	6 20 10.3	10.015
15	23 56 45.69	2.0223	1 39 49.0	10.111	15	1 36 18.60	2.1445	6 30 10.5	9.992
16	23 58 47.07	2.0237	1 29 41.9	10.127	16	1 38 27.38	2.1482	6 40 9.3	9.968
17	0 0 48.54	2.0252	1 19 33.8	10.142	17	1 40 36.39	2.1520	6 50 6.7	9.943
18	0 2 50.09	2.0267	1 9 24.9	10.156	18	1 42 45.62	2.1558	7 0 2.5	9.917
19	0 4 51.74	2.0283	0 59 15.2	10.169	19	1 44 55.09	2.1597	7 9 56.8	9.891
20	0 6 53.48	2.0298	0 49 4.6	10.182	20	1 47 4.79	2.1637	7 19 49.4	9.864
21	0 8 55.31	2.0314	0 38 53.3	10.195	21	1 49 14.73	2.1677	7 29 40.4	9.836
22	0 10 57.25	2.0331	0 28 41.2	10.207	22	1 51 24.91	2.1717	7 39 29.6	9.806
23	0 12 59.29	2.0348	S. 0 18 28.5	10.218	23	1 53 35.34	2.1758	N. 7 49 17.0	9.776
MONDAY 22.					WEDNESDAY 24.				
0	0 15 1.44	2.0367	S. 0 8 15.0	10.228	0	1 55 46.01	2.1799	N. 7 59 2.6	9.744
1	0 17 3.69	2.0382	N. 0 1 58.9	10.237	1	1 57 56.92	2.1840	8 8 46.2	9.711
2	0 19 6.06	2.0404	0 12 13.4	10.245	2	2 0 8.09	2.1882	8 18 27.9	9.677
3	0 21 8.54	2.0423	0 22 28.4	10.253	3	2 2 19.51	2.1925	8 28 7.5	9.643
4	0 23 11.13	2.0443	0 32 43.8	10.260	4	2 4 31.19	2.1968	8 37 45.0	9.607
5	0 25 13.84	2.0463	0 42 59.6	10.266	5	2 6 43.12	2.2011	8 47 20.3	9.570
6	0 27 16.68	2.0483	0 53 15.7	10.271	6	2 8 55.32	2.2054	8 56 53.4	9.532
7	0 29 19.64	2.0504	1 3 32.2	10.276	7	2 11 7.78	2.2098	9 6 24.2	9.494
8	0 31 22.73	2.0526	1 13 48.9	10.280	8	2 13 20.50	2.2143	9 15 52.7	9.454
9	0 33 25.95	2.0548	1 24 5.8	10.283	9	2 15 33.49	2.2189	9 25 18.7	9.413
10	0 35 29.31	2.0571	1 34 22.9	10.286	10	2 17 46.75	2.2233	9 34 42.3	9.371
11	0 37 32.80	2.0594	1 44 40.1	10.287	11	2 20 0.28	2.2278	9 44 3.3	9.329
12	0 39 36.44	2.0618	1 54 57.4	10.287	12	2 22 14.09	2.2324	9 53 21.8	9.286
13	0 41 40.22	2.0642	2 5 14.7	10.288	13	2 24 28.18	2.2371	10 2 37.5	9.239
14	0 43 44.14	2.0667	2 15 32.0	10.287	14	2 26 42.54	2.2417	10 11 50.5	9.192
15	0 45 48.21	2.0692	2 25 49.2	10.286	15	2 28 57.18	2.2464	10 21 0.6	9.146
16	0 47 52.44	2.0717	2 36 6.3	10.284	16	2 31 12.11	2.2511	10 30 7.9	9.097
17	0 49 56.82	2.0743	2 46 23.3	10.281	17	2 33 27.32	2.2559	10 39 12.2	9.047
18	0 52 1.36	2.0770	2 56 40.0	10.277	18	2 35 42.82	2.2607	10 48 13.5	8.996
19	0 54 6.06	2.0798	3 6 56.5	10.273	19	2 37 58.60	2.2656	10 57 11.7	8.943
20	0 56 10.93	2.0825	3 17 12.6	10.268	20	2 40 14.68	2.2704	11 6 6.7	8.890
21	0 58 15.96	2.0853	3 27 28.4	10.262	21	2 42 31.05	2.2753	11 14 58.5	8.837
22	1 0 21.17	2.0882	3 37 43.7	10.255	22	2 44 47.71	2.2802	11 23 47.1	8.782
23	1 2 26.55	2.0911	3 47 58.6	10.244	23	2 47 4.67	2.2852	11 32 32.3	8.724
24	1 4 32.10	2.0941	N. 3 58 13.0	10.235	24	2 49 21.93	2.2901	N. 11 41 14.0	8.666

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 25.					SATURDAY 27.				
0	2 40 21.93	2.2901	N.11° 41' 14.0	8.666	0	4 45 9.15	2.6298	N.17° 8' 23.5	4.316
1	2 51 39.48	2.2951	11 49 52.3	8.666	1	4 47 41.05	2.6338	17 12 50.9	4.401
2	2 53 57.34	2.3002	11 58 27.0	8.648	2	4 50 13.21	2.6381	17 17 11.5	4.386
3	2 56 15.50	2.3052	12 6 58.1	8.487	3	4 52 45.62	2.6423	17 21 25.1	4.171
4	2 58 33.96	2.3102	12 15 25.4	8.426	4	4 55 18.28	2.6464	17 25 31.8	4.044
5	3 0 52.72	2.3153	12 23 49.0	8.363	5	4 57 51.18	2.6504	17 29 31.4	3.986
6	3 3 11.79	2.3203	12 32 8.8	8.297	6	5 0 24.33	2.6544	17 33 23.9	3.916
7	3 5 31.16	2.3254	12 40 24.6	8.231	7	5 2 57.71	2.6583	17 37 9.2	3.866
8	3 7 50.84	2.3305	12 48 36.5	8.164	8	5 5 31.33	2.6621	17 40 47.3	3.876
9	3 10 10.83	2.3357	12 56 44.3	8.096	9	5 8 5.17	2.6660	17 44 18.1	3.485
10	3 12 31.12	2.3408	13 4 48.0	8.027	10	5 10 39.24	2.6696	17 47 41.7	3.233
11	3 14 51.72	2.3460	13 12 47.5	7.956	11	5 13 13.52	2.6732	17 50 57.8	3.289
12	3 17 12.64	2.3511	13 20 42.7	7.884	12	5 15 48.02	2.6767	17 54 6.7	3.064
13	3 19 33.96	2.3563	13 28 33.6	7.811	13	5 18 22.73	2.6802	17 57 8.0	2.980
14	3 21 55.40	2.3615	13 36 20.0	7.737	14	5 20 57.64	2.6836	18 0 1.8	2.883
15	3 24 17.24	2.3667	13 44 2.0	7.663	15	5 23 32.75	2.6869	18 2 48.0	2.767
16	3 26 39.40	2.3719	13 51 39.4	7.588	16	5 26 8.06	2.6901	18 5 26.6	2.680
17	3 29 1.87	2.3771	13 59 12.2	7.507	17	5 28 43.56	2.6932	18 7 57.5	2.482
18	3 31 24.65	2.3823	14 6 40.2	7.429	18	5 31 19.24	2.6962	18 10 20.8	2.322
19	3 33 47.74	2.3875	14 14 3.5	7.348	19	5 33 55.10	2.6991	18 12 36.3	2.193
20	3 36 11.15	2.3927	14 21 22.0	7.267	20	5 36 31.13	2.6919	18 14 43.9	2.063
21	3 38 34.86	2.3978	14 28 35.5	7.184	21	5 39 7.33	2.6947	18 16 43.7	1.982
22	3 40 58.89	2.4030	14 35 44.1	7.100	22	5 41 43.69	2.6973	18 18 35.7	1.801
23	3 43 23.23	2.4083	N.14 42 47.6	7.015	23	5 44 20.20	2.6998	N.18 20 19.8	1.670
FRIDAY 26.					SUNDAY 28.				
0	3 45 47.88	2.4134	N.14 49 45.9	6.929	0	5 46 56.87	2.6123	N.18 21 56.1	1.536
1	3 48 12.84	2.4185	14 56 39.0	6.843	1	5 49 33.68	2.6147	18 23 24.4	1.406
2	3 50 38.10	2.4237	15 3 26.9	6.758	2	5 52 10.63	2.6169	18 24 44.7	1.272
3	3 53 3.68	2.4288	15 10 9.4	6.663	3	5 54 47.71	2.6191	18 25 57.0	1.128
4	3 55 29.56	2.4339	15 16 46.5	6.573	4	5 57 24.92	2.6211	18 27 1.3	1.081
5	3 57 55.75	2.4390	15 23 18.1	6.481	5	6 0 2.24	2.6230	18 27 57.5	0.970
6	4 0 22.24	2.4441	15 29 44.2	6.388	6	6 2 39.68	2.6248	18 28 45.7	0.726
7	4 2 49.03	2.4491	15 36 4.6	6.294	7	6 5 17.22	2.6266	18 29 25.8	0.601
8	4 5 16.13	2.4541	15 42 19.3	6.197	8	6 7 54.87	2.6282	18 29 57.8	0.466
9	4 7 43.53	2.4591	15 48 28.3	6.101	9	6 10 32.61	2.6298	18 30 21.7	0.320
10	4 10 11.22	2.4641	15 54 31.4	6.008	10	6 13 10.44	2.6311	18 30 37.4	0.194
11	4 12 39.21	2.4690	16 0 28.6	5.908	11	6 15 48.35	2.6324	18 30 45.0	0.068
12	4 15 7.50	2.4739	16 6 19.8	5.808	12	6 18 26.33	2.6336	18 30 44.4	0.078
13	4 17 36.08	2.4788	16 12 5.0	5.703	13	6 21 4.38	2.6347	18 30 35.5	0.315
14	4 20 4.96	2.4836	16 17 44.0	5.600	14	6 23 42.49	2.6356	18 30 18.5	0.393
15	4 22 34.12	2.4884	16 23 16.9	5.496	15	6 26 20.66	2.6365	18 29 53.3	0.459
16	4 25 3.57	2.4932	16 28 43.5	5.391	16	6 28 58.87	2.6372	18 29 19.9	0.616
17	4 27 33.31	2.4979	16 34 3.8	5.285	17	6 31 37.12	2.6378	18 28 38.3	0.763
18	4 30 3.32	2.5026	16 39 17.7	5.178	18	6 34 15.41	2.6383	18 27 48.4	0.900
19	4 32 33.61	2.5073	16 44 25.2	5.070	19	6 36 53.72	2.6388	18 26 50.3	1.037
20	4 35 4.18	2.5119	16 49 26.1	4.961	20	6 39 32.06	2.6390	18 25 44.0	1.174
21	4 37 35.02	2.5163	16 54 20.5	4.851	21	6 42 10.41	2.6393	18 24 29.5	1.310
22	4 40 6.13	2.5208	16 59 8.2	4.740	22	6 44 48.76	2.6393	18 23 6.8	1.447
23	4 42 37.51	2.5252	17 3 49.2	4.628	23	6 47 27.12	2.6393	18 21 35.9	1.583
24	4 45 9.15	2.5295	N.17 8 23.5	4.515	24	6 50 5.47	2.6391	N.18 19 56.8	1.720

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 29.					WEDNESDAY 31.				
0	6 50 5.47	2.6391	N.18° 19' 56.8	1.730	0	8 54 35.62	2.6147	N.14° 30' 37.2	7.503
1	6 52 43.81	2.6389	18 18 9.5	1.886	1	8 57 6.37	2.6103	14 23 4.2	7.596
2	6 55 22.14	2.6386	18 16 14.1	1.992	2	8 59 36.85	2.6056	14 15 25.5	7.691
3	6 58 0.44	2.6381	18 14 10.5	2.128	3	9 2 7.07	2.6013	14 7 41.3	7.783
4	7 0 38.71	2.6374	18 11 58.8	2.263	4	9 4 37.01	2.4968	13 59 51.5	7.873
5	7 3 16.93	2.6365	18 9 38.9	2.398	5	9 7 6.68	2.4922	13 51 56.4	7.963
6	7 5 55.09	2.6356	18 7 11.0	2.533	6	9 9 36.07	2.4876	13 43 55.9	8.051
7	7 8 33.20	2.6347	18 4 35.0	2.667	7	9 12 5.19	2.4830	13 35 50.2	8.138
8	7 11 11.25	2.6336	18 1 51.0	2.801	8	9 14 34.03	2.4783	13 27 39.4	8.223
9	7 13 49.22	2.6323	17 58 58.9	2.935	9	9 17 2.59	2.4736	13 19 23.5	8.307
10	7 16 27.12	2.6309	17 55 58.8	3.068	10	9 19 30.86	2.4689	13 11 2.6	8.389
11	7 19 4.93	2.6295	17 52 50.8	3.200	11	9 21 58.85	2.4641	13 2 36.8	8.470
12	7 21 42.66	2.6281	17 49 34.8	3.332	12	9 24 26.55	2.4593	12 54 6.2	8.550
13	7 24 20.30	2.6266	17 46 10.9	3.463	13	9 26 53.97	2.4545	12 45 30.8	8.628
14	7 26 57.85	2.6249	17 42 39.2	3.594	14	9 29 21.09	2.4497	12 36 50.8	8.705
15	7 29 35.30	2.6232	17 38 59.6	3.724	15	9 31 47.92	2.4448	12 28 6.2	8.780
16	7 32 12.63	2.6213	17 35 12.3	3.854	16	9 34 14.46	2.4399	12 19 17.2	8.854
17	7 34 49.84	2.6193	17 31 17.2	3.983	17	9 36 40.71	2.4350	12 10 23.8	8.927
18	7 37 26.93	2.6171	17 27 14.4	4.111	18	9 39 6.66	2.4302	12 1 26.0	8.998
19	7 40 3.89	2.6149	17 23 3.9	4.238	19	9 41 32.32	2.4253	11 52 24.0	9.068
20	7 42 40.72	2.6126	17 18 45.8	4.364	20	9 43 57.69	2.4204	11 43 17.9	9.136
21	7 45 17.40	2.6103	17 14 20.2	4.490	21	9 46 22.76	2.4154	11 34 7.7	9.203
22	7 47 53.94	2.6077	17 9 47.0	4.615	22	9 48 47.54	2.4105	11 24 53.5	9.268
23	7 50 30.32	2.6051	N.17° 5' 6.4	4.739	23	9 51 12.02	2.4056	N.11° 15' 35.5	9.333
TUESDAY 30.					THURSDAY, AUGUST 1.				
0	7 53 6.55	2.6024	N.17° 0' 18.3	4.862	0	9 53 36.20	2.4006	N.11° 6' 13.7	9.394
1	7 55 42.61	2.6006	16 55 22.9	4.984	PHASES OF THE MOON.				
2	7 58 18.50	2.6067	16 50 20.2	5.105					
3	8 0 54.22	2.6038	16 45 10.2	5.226					
4	8 3 29.75	2.6007	16 39 53.1	5.346					
5	8 6 5.10	2.5976	16 34 28.8	5.464	<div> <div> <div>d</div> <div>h</div> <div>m</div> </div> <div> <div>● New Moon, 1 9 48.4</div> <div>☾ First Quarter, 8 5 31.5</div> <div>○ Full Moon, 16 7 55.8</div> <div>☾ Last Quarter, 24 2 36.0</div> <div>● New Moon, 30 16 43.1</div> </div> </div>				
6	8 8 40.26	2.5944	16 28 57.4	5.581					
7	8 11 15.23	2.5911	16 23 19.0	5.697					
8	8 13 49.99	2.5777	16 17 33.7	5.813					
9	8 16 24.55	2.5743	16 11 41.5	5.927	<div> <div> <div>d</div> <div>h</div> </div> <div> <div>☾ Perigee, 1 3.4</div> <div>☾ Apogee, 14 7.0</div> <div>☾ Perigee, 29 11.5</div> </div> </div>				
10	8 18 58.90	2.5708	16 5 42.4	6.041					
11	8 21 33.04	2.5673	15 59 36.6	6.153					
12	8 24 6.96	2.5638	15 53 24.1	6.264					
13	8 26 40.66	2.5606	15 47 4.9	6.374					
14	8 29 14.13	2.5569	15 40 39.2	6.483					
15	8 31 47.37	2.5531	15 34 7.0	6.590					
16	8 34 20.38	2.5493	15 27 28.4	6.696					
17	8 36 53.15	2.5443	15 20 43.4	6.802					
18	8 39 25.68	2.5403	15 13 52.2	6.906					
19	8 41 57.97	2.5361	15 6 54.8	7.008					
20	8 44 30.01	2.5319	14 59 51.2	7.109					
21	8 47 1.80	2.5277	14 52 41.6	7.210					
22	8 49 33.33	2.5234	14 45 26.0	7.309					
23	8 52 4.61	2.5191	14 38 4.5	7.407					
24	8 54 35.62	2.5147	N.14° 30' 37.2	7.503					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
3	SUN	W.	22° 51' 58"	2431	24° 34' 48"	2433	26° 17' 35"	2438	28° 0' 16"	2443
	Spica	E.	78 14 39	2073	76 22 57	2085	74 31 34	2097	72 40 30	2109
	Saturn	E.	104 10 17	2050	102 18 0	2062	100 26 2	2073	98 34 22	2086
4	SUN	W.	36 30 50	2497	38 12 8	2510	39 53 7	2525	41 33 45	2540
	Spica	E.	63 30 26	2184	61 41 35	2200	59 53 8	2217	58 5 6	2233
	Saturn	E.	89 21 11	2158	87 31 40	2174	85 42 33	2190	83 53 50	2206
	Antares	E.	109 12 6	2231	107 24 24	2245	105 37 4	2260	103 50 6	2275
5	SUN	W.	49 51 23	2526	51 29 43	2543	53 7 39	2562	54 45 10	2581
	Spica	E.	49 11 34	2238	47 26 15	2247	45 41 24	2267	43 57 2	2288
	Saturn	E.	74 56 31	2293	73 10 21	2311	71 24 37	2330	69 39 21	2348
	Antares	E.	95 1 6	2359	93 16 32	2377	91 32 24	2394	89 48 41	2413
6	SUN	W.	62 46 25	2776	64 21 24	2798	65 55 57	2815	67 30 5	2835
	Regulus	W.	18 41 21	2470	20 23 16	2485	22 4 51	2500	23 46 4	2516
	Spica	E.	35 22 44	2497	33 41 26	2520	32 0 41	2544	30 20 29	2568
	Saturn	E.	60 59 37	2441	59 17 0	2460	57 34 50	2479	55 53 7	2497
	Antares	E.	81 16 46	2507	79 35 43	2527	77 55 7	2545	76 14 58	2565
7	SUN	W.	75 14 29	2931	76 46 9	2950	78 17 25	2969	79 48 17	2986
	Regulus	W.	32 6 26	2600	33 45 21	2616	35 23 54	2633	37 2 4	2651
	Mars	W.	21 13 23	2603	22 47 48	2619	24 21 51	2636	25 55 32	2653
	Saturn	E.	47 30 56	2689	45 51 46	2697	44 13 0	2705	42 34 39	2713
	Antares	E.	68 0 52	2663	66 23 22	2682	64 46 18	2701	63 9 40	2731
	α Aquilæ	E.	115 2 22	3143	113 35 3	3145	112 7 48	3150	110 40 39	3157
8	SUN	W.	87 17 5	3074	88 45 46	3091	90 14 6	3108	91 42 6	3134
	Regulus	W.	45 7 18	2730	46 43 18	2746	48 18 57	2766	49 54 17	2775
	Mars	W.	33 38 36	2935	35 10 10	2951	36 41 24	2966	38 12 18	2982
	Saturn	E.	34 28 44	2729	32 52 42	2744	31 17 1	2760	29 41 40	2778
	Antares	E.	55 12 56	2818	53 38 52	2836	52 5 13	2857	50 31 59	2876
	α Aquilæ	E.	103 27 5	3198	102 0 53	3208	100 34 53	3218	99 9 5	3229
9	SUN	W.	98 57 24	3199	100 23 34	3213	101 49 28	3226	103 15 6	3240
	Regulus	W.	57 46 14	2845	59 19 44	2857	60 52 58	2869	62 25 56	2881
	Mars	W.	45 42 9	3055	47 11 15	3068	48 40 4	3081	50 8 37	3095
	Antares	E.	42 52 11	2979	41 21 32	3001	39 51 20	3022	38 21 35	3045
	α Aquilæ	E.	92 3 26	3288	90 39 1	3300	89 14 50	3313	87 50 54	3326
10	SUN	W.	110 19 30	3300	111 43 41	3311	113 7 40	3322	114 31 26	3332
	Regulus	W.	70 7 6	2935	71 38 40	2948	73 10 1	2956	74 41 10	2964
	Mars	W.	57 27 42	3151	58 54 50	3161	60 21 46	3171	61 48 30	3180
	Spica	W.	17 10 57	3114	18 38 49	3099	20 7 0	3088	21 35 24	3079
	Antares	E.	31 0 30	3183	29 34 1	3210	28 8 14	3237	26 43 12	3258
	α Aquilæ	E.	80 55 4	3398	79 32 42	3409	78 10 36	3424	76 48 47	3439
	Jupiter	E.	119 9 57	2930	117 38 4	2930	116 6 24	2939	114 34 55	2946
11	SUN	W.	121 27 34	3377	122 50 17	3384	124 12 52	3392	125 35 18	3399
	Regulus	W.	82 14 16	3004	83 44 24	3010	85 14 24	3017	86 44 16	3023
	Mars	W.	68 59 29	3223	70 25 12	3235	71 50 47	3246	73 16 14	3253
	Spica	W.	28 59 1	3009	30 27 48	3070	31 56 34	3072	33 25 18	3073
	α Aquilæ	E.	70 4 3	3320	68 44 1	3338	67 24 19	3355	66 4 56	3373
	Fomalhaut	E.	102 36 46	3354	101 13 37	3367	99 50 31	3390	98 27 29	3395
	Jupiter	E.	107 0 9	2987	105 29 40	2993	103 59 19	3000	102 29 6	3005

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
3	SUN W.	29° 42' 49"	2451	31° 25' 11"	2460	33° 7' 20"	2472	34° 49' 13"	2483
	Spica E.	70 49 45	2124	68 59 22	2137	67 9 20	2158	65 19 41	2169
	Saturn E.	96 43 1	2100	94 52 2	2113	93 1 23	2126	91 11 6	2142
4	SUN W.	43 14 2	2656	44 53 57	2673	46 33 29	2690	48 12 38	2697
	Spica E.	56 17 30	2262	54 30 20	2270	52 43 37	2289	50 57 22	2306
	Saturn E.	82 5 31	2223	80 17 38	2240	78 30 10	2257	76 43 7	2276
	Antares E.	102 3 30	2291	100 17 18	2307	98 31 29	2324	96 46 5	2343
5	SUN W.	56 22 16	2700	57 58 56	2719	59 35 11	2738	61 11 1	2757
	Spica E.	42 13 10	2409	40 29 48	2430	38 46 56	2451	37 4 34	2474
	Saturn E.	67 54 31	2366	66 10 8	2384	64 26 11	2403	62 42 40	2422
	Antares E.	88 5 25	2431	86 22 35	2450	84 40 12	2470	82 58 16	2488
6	SUN W.	69 3 47	2686	70 37 4	2673	72 9 57	2693	73 42 25	2692
	Regulus W.	25 26 55	2583	27 7 23	2640	28 47 27	2666	30 27 8	2683
	Spica E.	28 40 52	2696	27 1 52	2624	25 23 30	2658	23 45 47	2683
	Saturn E.	54 11 49	2616	52 30 58	2634	50 50 32	2652	49 10 31	2671
	Antares E.	74 35 16	2686	72 56 0	2604	71 17 11	2624	69 38 48	2643
7	SUN W.	81 18 47	3004	82 48 55	3022	84 18 40	3040	85 48 3	3057
	Regulus W.	38 39 50	2667	40 17 14	2663	41 54 17	2699	43 30 58	2715
	Mars W.	27 28 51	2699	29 1 49	2667	30 34 26	2698	32 6 41	2699
	Saturn E.	40 56 41	2660	39 19 8	2677	37 41 57	2694	36 5 9	2711
	Antares E.	61 33 28	2741	59 57 42	2760	58 22 21	2779	56 47 26	2796
	α Aquilæ E.	109 13 38	3163	107 46 45	3172	106 20 2	3179	104 53 28	3186
8	SUN W.	93 9 47	3139	94 37 9	3166	96 4 12	3170	97 30 57	3186
	Regulus W.	51 29 17	2790	53 3 58	2804	54 38 21	2818	56 12 26	2831
	Mars W.	39 42 53	2997	41 13 9	3012	42 43 7	3026	44 12 47	3041
	Saturn E.	28 6 43	2793	26 32 6	2809	24 57 50	2826	23 23 55	2841
	Antares E.	48 59 10	2897	47 26 47	2916	45 54 49	2937	44 23 17	2956
	α Aquilæ E.	97 43 30	3240	96 18 8	3253	94 53 0	3264	93 28 6	3276
9	SUN W.	104 40 28	3253	106 5 35	3265	107 30 27	3277	108 55 5	3286
	Regulus W.	63 58 39	2893	65 31 7	2906	67 8 20	2916	68 35 20	2926
	Mars W.	51 36 55	3105	53 4 57	3117	54 32 46	3129	56 0 21	3140
	Antares E.	36 52 19	3070	35 23 33	3096	33 55 19	3123	32 27 37	3142
	α Aquilæ E.	86 27 13	3239	85 3 47	3253	83 40 37	3267	82 17 43	3280
10	SUN W.	115 55 1	3341	117 18 25	3351	118 41 38	3359	120 4 41	3366
	Regulus W.	76 12 8	2973	77 42 55	2981	79 13 32	2989	80 43 59	2997
	Mars W.	63 15 3	3189	64 41 24	3198	66 7 36	3207	67 33 37	3214
	Spica W.	23 3 59	3074	24 32 40	3070	26 1 26	3069	27 30 13	3069
	Antares E.	25 19 0	3349	23 55 45	3405	22 33 34	3469	21 12 35	3446
	α Aquilæ E.	75 27 15	3484	74 6 0	3471	72 45 3	3487	71 24 24	3493
	Jupiter E.	113 3 38	2987	111 32 31	2956	110 1 34	2973	108 30 47	2980
11	SUN W.	126 57 36	3406	128 19 46	3412	129 41 49	3418	131 3 45	3423
	Regulus W.	88 14 0	3029	89 43 37	3034	91 13 8	3039	92 42 32	3043
	Mars W.	74 41 33	3248	76 6 45	3254	77 31 50	3259	78 56 49	3265
	Spica W.	34 54 0	3076	36 22 40	3077	37 51 18	3079	39 19 53	3082
	α Aquilæ E.	64 45 54	3564	63 27 13	3616	62 8 55	3636	60 51 0	3659
	Fomalhaut E.	97 4 32	3396	95 41 39	3371	94 18 49	3374	92 56 3	3379
	Jupiter E.	100 59 0	3011	99 29 1	3017	97 59 9	3022	96 29 23	3026

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
12	SUN	W.	132° 25' 35"	3430	133° 47' 18"	3455	135° 8' 55"	3439	136° 30' 27"	3445
	Mars	W.	80 21 42	3389	81 46 30	3273	83 11 13	3277	84 35 51	3281
	Spica	W.	40 48 25	3084	42 16 54	3085	43 45 22	3087	45 13 47	3089
	α Aquilæ	E.	59 33 29	3682	58 16 23	3708	56 59 44	3734	55 43 33	3762
	Fomalhaut	E.	91 33 22	3382	90 10 45	3386	88 48 12	3390	87 25 44	3394
	Jupiter	E.	94 59 42	3080	93 30 7	3084	92 0 36	3038	90 31 10	3041
13	Mars	W.	91 38 7	3294	93 2 26	3295	94 26 43	3297	95 50 58	3298
	Spica	W.	52 35 26	3095	54 3 42	3096	55 31 57	3096	57 0 12	3096
	Saturn	W.	26 44 28	3079	28 13 3	3078	29 41 39	3080	31 10 13	3079
	α Aquilæ	E.	49 30 34	3634	48 17 49	3676	47 5 46	3623	45 54 29	3673
	Fomalhaut	E.	80 34 38	3416	79 12 40	3422	77 50 48	3427	76 29 2	3432
	Jupiter	E.	83 4 50	3052	81 35 41	3064	80 6 35	3066	78 37 30	3066
14	Mars	W.	102 52 1	3300	104 16 13	3299	105 40 25	3299	107 4 39	3298
	Spica	W.	64 21 24	3095	65 49 40	3094	67 17 57	3092	68 46 16	3091
	Saturn	W.	38 33 10	3078	40 1 47	3077	41 30 25	3076	42 59 4	3075
	Fomalhaut	E.	69 41 51	3464	68 20 47	3471	66 59 51	3480	65 39 4	3488
	Jupiter	E.	71 12 17	3057	69 43 15	3065	68 14 12	3066	66 45 8	3054
	α Pegasi	E.	84 12 50	3344	82 49 29	3345	81 26 10	3347	80 2 53	3348
15	Spica	W.	76 8 16	3082	77 36 47	3080	79 5 21	3078	80 33 57	3075
	Saturn	W.	50 22 45	3086	51 51 36	3064	53 20 30	3062	54 49 26	3060
	Antares	W.	31 21 0	3289	32 45 24	3270	34 10 11	3263	35 35 17	3237
	Fomalhaut	E.	58 57 51	3544	57 38 15	3557	56 18 54	3573	54 59 50	3586
	Jupiter	E.	59 19 27	3047	57 50 13	3045	56 20 55	3043	54 51 35	3040
	α Pegasi	E.	73 6 58	3360	71 43 56	3363	70 20 57	3366	68 58 2	3370
16	α Arietis	E.	116 26 21	3225	115 0 41	3218	113 34 53	3212	112 8 58	3207
	Spica	W.	87 57 51	3060	89 26 49	3056	90 55 52	3053	92 24 59	3050
	Saturn	W.	62 15 0	3043	63 44 19	3041	65 13 41	3038	66 43 7	3033
	Antares	W.	42 44 58	3175	44 11 37	3165	45 38 28	3155	47 5 31	3148
	Jupiter	E.	47 24 7	3026	45 54 26	3022	44 24 41	3019	42 54 52	3016
	Fomalhaut	E.	48 29 29	3097	47 12 39	3737	45 56 20	3750	44 40 35	3753
17	α Pegasi	E.	62 4 42	3396	60 42 21	3403	59 20 8	3411	57 58 4	3420
	α Arietis	E.	104 57 48	3180	103 31 15	3175	102 4 36	3170	100 37 51	3165
	Spica	W.	99 51 45	3029	101 21 22	3025	102 51 4	3020	104 20 52	3015
	Saturn	W.	74 11 35	3012	75 41 33	3008	77 11 36	3003	78 41 45	2997
	Antares	W.	54 23 29	3103	55 51 35	3096	57 19 50	3087	58 48 15	3081
	Jupiter	E.	35 24 37	2996	33 54 20	2992	32 23 57	2988	30 53 29	2984
18	Fomalhaut	E.	38 32 23	4042	37 21 25	4112	36 11 35	4189	35 2 59	4278
	α Pegasi	E.	51 10 36	3481	49 49 51	3497	48 29 24	3515	47 9 17	3537
	α Arietis	E.	93.22 37	3141	91 55 17	3136	90 27 50	3130	89 0 17	3126
	Saturn	W.	86 14 7	2971	87 44 56	2965	89 15 52	2961	90 46 54	2964
	Antares	W.	66 12 35	3043	67 41 55	3036	69 11 23	3028	70 41 1	3021
	α Pegasi	E.	40 35 29	3687	39 18 28	3726	38 2 11	3776	36 46 44	3833
19	α Arietis	E.	81 41 9	3102	80 13 2	3098	78 44 50	3093	77 16 32	3088
	Saturn	W.	98 24 10	2921	99 56 2	2914	101 28 3	2907	103 0 13	2900
	Antares	W.	78 11 29	2983	79 42 3	2976	81 12 46	2967	82 43 40	2960
	α Aquilæ	W.	37 4 50	4480	38 9 44	4321	39 16 17	4223	40 24 22	4133
	α Arietis	E.	69 53 42	3068	68 24 53	3065	66 56 0	3060	65 27 2	3056
	Aldebaran	E.	102 6 41	2919	100 34 46	2912	99 2 43	2905	97 30 30	2897

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
12	Sun W.	137° 51' 53"	3449	139° 13' 14"	3454	140° 34' 30"	3457	141° 55' 42"	3463
	Mars W.	86 0 25	3384	87 24 55	3387	88 49 22	3389	90 13 46	3392
	Spica W.	46 42 10	3091	48 10 31	3091	49 38 51	3093	51 7 9	3094
	α Aquilæ E.	54 27 51	3792	53 12 40	3823	51 58 2	3867	50 43 59	3895
	Fomalhaut E.	86 3 21	3399	84 41 3	3408	83 18 50	3408	81 56 42	3411
	Jupiter E.	89 1 47	3043	87 32 28	3046	86 3 12	3048	84 33 59	3051
13	Mars W.	97 15 12	3299	98 39 25	3300	100 3 37	3300	101 27 49	3300
	Spica W.	58 28 26	3096	59 56 40	3096	61 24 54	3096	62 53 9	3096
	Saturn W.	32 38 48	3079	34 7 23	3079	35 35 58	3078	37 4 34	3078
	α Aquilæ E.	44 44 1	4129	43 34 27	4186	42 25 50	4264	41 18 15	4377
	Fomalhaut E.	75 7 22	3438	73 45 49	3444	72 24 22	3451	71 3 3	3457
	Jupiter E.	77 8 27	3056	75 39 24	3057	74 10 21	3057	72 41 20	3057
14	Mars W.	108 28 53	3297	109 53 8	3296	111 17 25	3294	112 41 44	3292
	Spica W.	70 14 36	3090	71 42 58	3089	73 11 22	3087	74 39 48	3085
	Saturn W.	44 27 44	3073	45 56 27	3073	47 25 11	3071	48 53 56	3068
	Fomalhaut E.	64 18 27	3496	62 58 1	3507	61 37 45	3518	60 17 41	3531
	Jupiter E.	65 16 3	3054	63 46 57	3052	62 17 49	3051	60 48 39	3049
	α Pegasi E.	78 39 37	3350	77 16 23	3352	75 53 12	3355	74 30 4	3357
15	Spica W.	82 2 37	3073	83 31 20	3069	85 0 7	3067	86 28 57	3064
	Saturn W.	56 18 26	3056	57 47 29	3053	59 16 36	3051	60 45 46	3047
	Antares W.	37 0 42	3223	38 26 24	3210	39 52 21	3196	41 18 33	3187
	Fomalhaut E.	53 41 3	3007	52 22 36	3026	51 4 30	3048	49 46 47	3071
	Jupiter E.	53 22 12	3039	51 52 46	3034	50 23 17	3033	48 53 44	3029
	α Pegasi E.	67 35 11	3374	66 12 25	3379	64 49 45	3385	63 27 11	3389
	α Arietis E.	110 42 57	3201	109 16 49	3196	107 50 35	3191	106 24 15	3185
16	Spica W.	93 54 10	3046	95 23 26	3043	96 52 47	3039	98 22 13	3038
	Saturn W.	68 12 39	3030	69 42 15	3026	71 11 56	3021	72 41 43	3017
	Antares W.	48 32 46	3137	50 0 11	3128	51 27 47	3119	52 55 33	3111
	Jupiter E.	41 24 58	3012	39 55 0	3008	38 24 58	3004	36 54 50	3000
	Fomalhaut E.	43 25 26	3633	42 10 58	3677	40 57 15	3626	39 44 22	3580
	α Pegasi E.	56 36 10	3430	55 14 27	3440	53 52 56	3452	52 31 38	3466
	α Arietis E.	99 11 0	3160	97 44 3	3155	96 17 0	3150	94 49 51	3145
17	Spica W.	105 50 46	3010	107 20 46	3005	108 50 52	3001	110 21 4	2996
	Saturn W.	80 12 1	2993	81 42 23	2989	83 12 51	2983	84 43 26	2977
	Antares W.	60 16 48	3073	61 45 31	3058	63 14 23	3057	64 43 25	3051
	Jupiter E.	29 22 56	2980	27 52 18	2975	26 21 34	2971	24 50 46	2967
	Fomalhaut E.	33 55 46	4378	32 50 5	4498	31 46 7	4525	30 44 4	4776
	α Pegasi E.	45 49 34	3650	44 30 16	3687	43 11 27	3616	41 53 10	3649
	α Arietis E.	87 32 39	3131	86 4 55	3116	84 37 5	3112	83 9 10	3107
18	Saturn W.	92 18 5	2947	93 49 24	2941	95 20 51	2935	96 52 26	2927
	Antares W.	72 10 48	3014	73 40 44	3005	75 10 50	2998	76 41 5	2991
	α Pegasi E.	35 32 15	2896	34 18 50	2884	33 6 35	4046	31 55 41	4140
	α Arietis E.	75 48 8	3084	74 19 39	3080	72 51 5	3076	71 22 26	3073
19	Saturn W.	104 32 33	2992	106 5 2	2984	107 37 41	2976	109 10 30	2969
	Antares W.	84 14 43	2962	85 45 56	2948	87 17 20	2935	88 48 54	2927
	α Aquilæ W.	41 33 52	4051	42 44 41	3977	43 56 43	3909	45 9 54	3846
	α Arietis E.	63 57 59	3053	62 28 52	3080	60 59 41	3047	59 30 26	3044
	Aldebaran E.	95 58 7	2869	94 25 34	2862	92 52 52	2873	91 19 59	2866

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^a .	P. L. of Dist.	VI ^a .	P. L. of Dist.	IX ^a .	P. L. of Dist.
20	Antares W.	90° 20' 38"	2919	91° 52' 33"	2911	93° 24' 38"	2902	94° 56' 54"	2898
	α Aquilæ W.	46 24 9	2788	47 39 24	2784	48 55 35	2884	50 12 39	2837
	α Arietis E.	58 1 8	3042	58 31 47	3040	55 2 24	2939	53 33 0	3039
	Aldebaran E.	89 46 56	2867	88 13 42	2848	86 40 17	2840	85 6 41	2831
	SUN E.	139 1 44	3327	137 36 7	3217	136 10 18	3206	134 44 16	3196
21	Antares W.	102 41 6	2848	104 14 31	2838	105 48 9	2820	107 21 58	2820
	α Aquilæ W.	56 49 36	3444	58 11 3	3410	59 33 8	3379	60 55 48	3350
	α Arietis E.	46 6 4	3047	44 36 49	3062	43 7 40	3058	41 38 39	3057
	Aldebaran E.	77 15 39	2782	75 40 48	2772	74 5 44	2762	72 30 26	2752
	SUN E.	127 30 49	3139	126 3 27	3128	124 35 51	3115	123 8 0	3104
22	α Aquilæ W.	67 57 10	3220	69 22 55	3198	70 49 7	3176	72 15 46	3154
	Fomalhaut W.	36 16 39	3791	37 31 51	3700	38 48 38	3619	40 6 52	3648
	Jupiter W.	26 52 46	2881	28 29 52	2898	30 7 15	2866	31 44 56	2841
	Aldebaran E.	64 30 22	2895	62 53 36	2868	61 16 33	2871	59 39 14	2880
	SUN E.	115 45 2	3041	114 15 40	3027	112 46 1	3014	111 16 5	3001
23	α Aquilæ W.	79 35 10	3067	81 4 12	3080	82 33 36	3022	84 3 21	3006
	Fomalhaut W.	46 56 31	3268	48 21 37	3206	49 47 39	3163	51 14 33	3121
	Jupiter W.	39 57 53	2874	41 37 24	2880	43 17 14	2846	44 57 23	2832
	α Pegasi W.	32 51 9	3086	34 9 6	3086	35 28 50	3447	36 50 13	3428
	Aldebaran E.	51 28 27	2894	49 49 24	2892	48 10 4	2868	46 30 25	2863
24	SUN E.	103 42 10	2880	102 10 29	2916	100 38 30	2901	99 6 12	2886
	α Aquilæ W.	91 37 1	2932	93 8 39	2919	94 40 34	2906	96 12 45	2896
	Fomalhaut W.	58 40 39	2949	60 11 56	2918	61 43 52	2869	63 16 25	2869
	Jupiter W.	53 23 4	2460	55 5 13	2446	56 47 42	2431	58 30 32	2417
	α Pegasi W.	43 57 34	3064	45 26 28	3016	46 56 21	2972	48 27 9	2930
25	Aldebaran E.	38 7 19	2468	36 25 42	2469	34 43 45	2468	33 1 28	2440
	SUN E.	91 19 51	2809	89 45 35	2793	88 10 58	2778	86 36 1	2763
	α Aquilæ W.	103 57 0	2849	105 30 24	2842	107 3 57	2837	108 37 37	2833
	Fomalhaut W.	71 7 32	2740	72 43 19	2718	74 19 35	2697	75 56 19	2677
	Jupiter W.	67 9 59	2342	68 54 57	2326	70 40 16	2313	72 25 57	2298
26	α Pegasi W.	56 13 21	2767	57 48 45	2728	59 24 48	2700	61 1 28	2674
	SUN E.	78 36 6	2884	76 59 4	2867	75 21 40	2852	73 43 55	2837
	Fomalhaut W.	84 6 22	2898	85 45 33	2872	87 25 5	2859	89 4 57	2848
	Jupiter W.	81 19 39	2227	83 7 26	2213	84 55 34	2200	86 44 2	2186
	α Pegasi W.	69 13 16	2867	70 53 10	2886	72 33 33	2817	74 14 23	2489
27	α Arietis W.	26 17 51	2966	27 48 47	2873	29 21 41	2792	30 56 29	2738
	SUN E.	65 30 0	2561	63 50 11	2545	62 10 2	2532	60 29 23	2517
	Fomalhaut W.	97 28 35	2480	99 10 2	2483	100 51 39	2476	102 33 26	2470
	Jupiter W.	95 51 17	2194	97 41 39	2113	99 39 18	2108	101 23 15	2091
	α Pegasi W.	82 44 33	2419	84 27 40	2408	86 11 4	2395	87 54 46	2383
28	α Arietis W.	39 9 32	2477	40 51 17	2442	42 33 52	2410	44 17 12	2382
	SUN E.	52 2 23	2463	50 20 4	2441	48 37 28	2431	46 54 37	2419
	Jupiter W.	110 41 46	2046	112 34 8	2089	114 26 42	2031	116 19 27	2026
	α Pegasi W.	96 36 51	2343	98 21 48	2337	100 6 53	2331	101 52 3	2321
	α Arietis W.	53 3 2	2272	54 49 42	2256	56 36 48	2240	58 24 16	2227
29	SUN E.	38 16 48	2376	36 32 38	2369	34 48 19	2364	33 3 52	2350

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
20	Antares W.	96° 29' 22"	2884	98° 2' 1"	2876	99° 34' 51"	2866	101° 7' 53"	2858
	α Aquilæ W.	51 30 33	2894	52 49 14	2884	54 8 39	2815	55 28 47	2478
	α Arietis E.	52 3 35	3039	50 34 10	3039	49 4 46	3041	47 35 24	3043
	Aldebaran E.	83 32 53	2821	81 58 53	2812	80 24 41	2803	78 50 17	2799
	SUN E.	133 18 1	3184	131 51 33	3173	130 24 52	3162	128 57 57	3161
21	Antares W.	108 56 0	2811	110 30 14	2801	112 4 41	2792	113 39 20	2789
	α Aquilæ W.	62 19 2	3222	63 42 48	3224	65 7 6	3270	66 31 53	3244
	α Arietis E.	40 9 49	3078	38 41 12	3081	37 12 52	3108	35 44 52	3127
	Aldebaran E.	70 54 55	2741	69 19 9	2729	67 43 8	2718	66 6 52	2707
	SUN E.	121 39 55	3091	120 11 35	3078	118 42 59	3066	117 14 8	3064
22	α Aquilæ W.	73 42 50	3133	75 10 19	3118	76 38 13	3094	78 6 30	3078
	Fomalhaut W.	41 26 27	3477	42 47 17	3415	44 9 17	3387	45 32 23	3308
	Jupiter W.	33 22 55	2626	35 1 12	2615	36 29 47	2601	38 18 41	2588
	Aldebaran E.	58 1 39	2646	56 23 47	2634	54 45 38	2621	53 7 12	2607
	SUN E.	109 45 53	2887	108 15 24	2873	106 44 37	2869	105 13 33	2844
23	α Aquilæ W.	85 33 27	2990	87 3 52	2974	88 34 37	2960	90 5 40	2946
	Fomalhaut W.	52 42 17	3082	54 10 48	3047	55 40 3	3012	57 10 1	2969
	Jupiter W.	46 37 52	2818	48 18 40	2804	49 59 48	2489	51 41 16	2476
	α Pegasi W.	38 13 6	3396	39 37 23	3380	41 2 57	3170	42 29 42	3114
	Aldebaran E.	44 50 26	2640	43 10 8	2637	41 29 32	2612	39 48 36	2497
	SUN E.	97 33 35	2871	96 0 39	2866	94 27 23	2840	92 53 47	2828
24	α Aquilæ W.	97 45 10	2884	99 17 49	2874	100 50 41	2865	102 23 45	2856
	Fomalhaut W.	64 49 32	2896	66 23 13	2810	67 57 28	2786	69 32 15	2768
	Jupiter W.	60 13 43	2492	61 57 15	2387	63 41 8	2372	65 25 23	2357
	α Pegasi W.	49 58 50	2891	51 31 20	2886	53 4 36	2821	54 38 37	2766
	Aldebaran E.	31 18 50	2426	29 35 51	2411	27 52 32	2396	26 8 52	2381
	SUN E.	85 0 44	2747	83 25 6	2731	81 49 7	2716	80 12 47	2699
25	α Aquilæ W.	110 11 22	2880	111 45 11	2829	113 19 1	2829	114 52 51	2821
	Fomalhaut W.	77 33 30	2667	79 11 7	2640	80 49 8	2622	82 27 33	2604
	Jupiter W.	74 11 59	2283	75 58 22	2269	77 45 7	2256	79 32 12	2241
	α Pegasi W.	62 38 43	2648	64 16 33	2624	65 54 56	2600	67 33 51	2578
	SUN E.	72 5 50	2621	70 27 24	2606	68 48 37	2591	67 9 29	2578
26	Fomalhaut W.	90 45 7	2633	92 25 35	2600	94 6 20	2610	95 47 20	2499
	Jupiter W.	88 32 51	2173	90 21 59	2161	92 11 26	2148	94 1 12	2136
	α Pegasi W.	75 55 38	2481	77 37 18	2465	79 19 21	2449	81 1 46	2433
	α Arietis W.	32 32 29	2661	34 10 1	2606	35 48 48	2608	37 28 41	2616
	SUN E.	58 48 44	2604	57 7 36	2491	55 26 10	2477	53 44 25	2466
27	Fomalhaut W.	104 15 21	2466	105 57 22	2463	107 39 27	2462	109 21 34	2461
	Jupiter W.	103 14 28	2081	105 5 56	2073	106 57 39	2062	108 49 36	2063
	α Pegasi W.	89 38 45	2373	91 22 58	2364	93 7 24	2366	94 52 2	2348
	α Arietis W.	46 1 12	2386	47 45 50	2332	49 31 3	2310	51 16 48	2290
	SUN E.	45 11 30	2410	43 28 9	2400	41 44 34	2391	40 0 47	2383
28	Jupiter W.	118 12 24	2019	120 5 28	2014	121 58 40	2010	123 52 0	2006
	α Pegasi W.	103 37 16	2331	105 22 31	2331	107 7 46	2332	108 52 59	2336
	α Arietis W.	60 12 4	2214	62 0 10	2203	63 48 33	2194	65 37 10	2186
	SUN E.	31 19 18	2366	29 34 39	2363	27 49 56	2361	26 5 11	2350

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be added to		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.		subtracted from Apparent Time.		
Thur.	1	8 ^h 44 ^m 36.00	9.721	N. 18° 5' 30.1"	37.61	15 48.00	66.67	6 ^m 4.84	0.135	
Fri.	2	8 48 28.99	9.695	17 50 18.7	38.34	15 48.13	66.58	6 1.28	0.161	
Sat.	3	8 52 21.35	9.670	17 34 49.8	39.06	15 48.26	66.50	5 57.10	0.186	
Sun.	4	8 56 13.10	9.644	17 19 3.8	39.77	15 48.40	66.41	5 52.30	0.212	
Mon.	5	9 0 4.24	9.619	17 3 1.0	40.46	15 48.55	66.33	5 46.90	0.237	
Tues.	6	9 3 54.76	9.593	16 46 41.8	41.14	15 48.70	66.24	5 40.88	0.263	
Wed.	7	9 7 44.66	9.567	16 30 6.4	41.81	15 48.85	66.16	5 34.25	0.289	
Thur.	8	9 11 33.95	9.543	16 13 15.1	42.47	15 49.01	66.07	5 27.01	0.314	
Fri.	9	9 15 22.64	9.518	15 56 8.0	43.12	15 49.17	65.98	5 19.17	0.339	
Sat.	10	9 19 10.75	9.493	15 38 45.6	43.75	15 49.33	65.90	5 10.74	0.363	
Sun.	11	9 22 58.27	9.468	15 21 8.2	44.37	15 49.50	65.82	5 1.73	0.387	
Mon.	12	9 26 45.20	9.444	15 3 16.1	44.97	15 49.67	65.74	4 52.13	0.411	
Tues.	13	9 30 31.56	9.421	14 45 9.6	45.57	15 49.84	65.66	4 41.97	0.435	
Wed.	14	9 34 17.35	9.398	14 26 49.1	46.15	15 50.02	65.58	4 31.24	0.458	
Thur.	15	9 38 2.60	9.376	14 8 14.8	46.72	15 50.20	65.50	4 19.96	0.481	
Fri.	16	9 41 47.33	9.354	13 49 26.9	47.28	15 50.38	65.42	4 8.17	0.503	
Sat.	17	9 45 31.54	9.333	13 30 25.8	47.82	15 50.56	65.34	3 55.87	0.524	
Sun.	18	9 49 15.25	9.313	13 11 11.8	48.35	15 50.74	65.27	3 43.05	0.545	
Mon.	19	9 52 58.46	9.293	12 51 45.2	48.87	15 50.93	65.19	3 29.74	0.565	
Tues.	20	9 56 41.19	9.273	12 32 6.3	49.38	15 51.12	65.12	3 15.96	0.584	
Wed.	21	10 0 23.46	9.254	12 12 15.4	49.87	15 51.31	65.05	3 1.71	0.603	
Thur.	22	10 4 5.28	9.235	11 52 12.8	50.35	15 51.50	64.98	2 47.02	0.621	
Fri.	23	10 7 46.67	9.217	11 31 58.8	50.82	15 51.70	64.91	2 31.90	0.639	
Sat.	24	10 11 27.64	9.199	11 11 33.8	51.27	15 51.90	64.85	2 16.36	0.656	
Sun.	25	10 15 8.20	9.182	10 50 58.2	51.71	15 52.10	64.79	2 0.41	0.673	
Mon.	26	10 18 48.36	9.166	10 30 12.1	52.14	15 52.31	64.73	1 44.06	0.689	
Tues.	27	10 22 28.13	9.150	10 9 16.0	52.55	15 52.52	64.67	1 27.33	0.705	
Wed.	28	10 26 7.54	9.135	9 48 10.2	52.95	15 52.74	64.62	1 10.24	0.721	
Thur.	29	10 29 46.60	9.121	9 26 55.0	53.34	15 52.96	64.57	0 52.79	0.735	
Fri.	30	10 33 25.31	9.107	9 5 30.7	53.71	15 53.19	64.52	0 34.99	0.749	
Sat.	31	10 37 3.68	9.093	8 43 57.6	54.07	15 53.42	64.47	0 16.85	0.763	
Sun.	32	10 40 41.72	9.080	N. 8 22 16.2	54.41	15 53.65	64.43	0 1.61	0.776	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from		Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	added to Mean Time.			
Thur.	1	^h 8 ^m 44 ^s 35.01	^s 9.721	N. 18° 5' 33.8"	^s 37.61	^m 6 ^s 4.85	^s 0.135	^h 8 ^m 38 ^s 30.16	
Fri.	2	8 48 28.01	9.695	17 50 22.5	38.34	6 1.29	0.161	8 42 26.72	
Sat.	3	8 52 20.39	9.670	17 34 53.7	39.06	5 57.12	0.186	8 46 23.27	
Sun.	4	8 56 12.15	9.644	17 19 7.7	39.77	5 52.32	0.212	8 50 19.83	
Mon.	5	9 0 3.31	9.619	17 3 4.9	40.46	5 46.92	0.237	8 54 16.39	
Tues.	6	9 3 53.85	9.593	16 46 45.7	41.14	5 40.91	0.263	8 58 12.94	
Wed.	7	9 7 43.77	9.567	16 30 10.3	41.81	5 34.28	0.289	9 2 9.49	
Thur.	8	9 11 33.08	9.543	16 13 18.9	42.47	5 27.03	0.314	9 6 6.05	
Fri.	9	9 15 21.80	9.518	15 56 11.8	43.12	5 19.20	0.339	9 10 2.60	
Sat.	10	9 19 9.93	9.493	15 38 49.4	43.75	5 10.77	0.363	9 13 59.16	
Sun.	11	9 22 57.47	9.468	15 21 11.9	44.37	5 1.76	0.387	9 17 55.71	
Mon.	12	9 26 44.43	9.444	15 3 19.7	44.97	4 52.16	0.411	9 21 52.27	
Tues.	13	9 30 30.82	9.421	14 45 13.2	45.57	4 42.00	0.435	9 25 48.82	
Wed.	14	9 34 16.64	9.398	14 26 52.7	46.15	4 31.27	0.458	9 29 45.37	
Thur.	15	9 38 1.92	9.376	14 8 18.2	46.72	4 19.99	0.481	9 33 41.93	
Fri.	16	9 41 46.68	9.354	13 49 30.2	47.28	4 8.20	0.503	9 37 38.48	
Sat.	17	9 45 30.93	9.333	13 30 29.0	47.82	3 35.90	0.524	9 41 35.03	
Sun.	18	9 49 14.67	9.313	13 11 14.8	48.35	3 43.08	0.545	9 45 31.59	
Mon.	19	9 52 57.91	9.293	12 51 48.0	48.87	3 29.77	0.565	9 49 28.14	
Tues.	20	9 56 40.68	9.273	12 32 9.0	49.38	3 15.99	0.584	9 53 24.69	
Wed.	21	10 0 22.99	9.254	12 12 17.9	49.87	3 1.74	0.603	9 57 21.25	
Thur.	22	10 4 4.85	9.235	11 52 15.1	50.35	2 47.05	0.621	10 1 17.80	
Fri.	23	10 7 46.28	9.217	11 32 1.0	50.82	2 31.93	0.639	10 5 14.35	
Sat.	24	10 11 27.29	9.199	11 11 35.8	51.27	2 16.38	0.656	10 9 10.91	
Sun.	25	10 15 7.89	9.182	10 50 59.9	51.71	2 0.43	0.673	10 13 7.46	
Mon.	26	10 18 48.09	9.166	10 30 13.6	52.14	1 44.08	0.689	10 17 4.01	
Tues.	27	10 22 27.91	9.150	10 9 17.3	52.55	1 27.34	0.705	10 21 0.57	
Wed.	28	10 26 7.37	9.135	9 48 11.2	52.95	1 10.25	0.720	10 24 57.12	
Thur.	29	10 29 46.47	9.121	9 26 55.7	53.34	0 52.80	0.735	10 28 53.67	
Fri.	30	10 33 25.22	9.107	9 5 31.2	53.71	0 35.00	0.749	10 32 50.22	
Sat.	31	10 37 3.63	9.093	8 43 57.9	54.07	0 16.85	0.763	10 36 46.78	
Sun.	32	10 40 41.72	9.080	N. 8 22 16.2	54.41	0 1.61	0.776	10 40 43.33	

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Dist. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Dist. for 1 hour.	LATITUDE.			
		λ	λ'					
1	213	128° 43' 13.2	42' 47.0	143.62	—0.11	0.0063709	24.4	15 18 58.87
2	214	129 40 40.4	40 14.0	143.65	+0.01	.0063111	25.4	15 15 2.96
3	215	130 38 8.4	37 41.8	143.69	0.14	.0062489	26.4	15 11 7.05
4	216	131 35 37.2	35 10.5	143.72	0.27	.0061844	27.3	15 7 11.13
5	217	132 33 6.8	32 40.0	143.76	0.40	.0061178	28.2	15 3 15.22
6	218	133 30 37.3	30 10.4	143.79	0.51	.0060492	29.0	14 59 19.31
7	219	134 28 8.5	27 41.5	143.82	0.60	.0059786	29.7	14 55 23.41
8	220	135 25 40.5	25 13.3	143.85	0.66	.0059062	30.4	14 51 27.51
9	221	136 23 13.3	22 46.0	143.89	0.68	.0058322	31.1	14 47 31.60
10	222	137 20 47.0	20 19.6	143.93	0.67	.0057567	31.7	14 43 35.69
11	223	138 18 21.7	17 54.2	143.97	0.63	.0056799	32.2	14 39 39.78
12	224	139 15 57.4	15 29.8	144.01	0.57	.0056020	32.7	14 35 43.88
13	225	140 13 34.1	13 6.3	144.05	0.48	.0055229	33.2	14 31 47.97
14	226	141 11 12.0	10 44.1	144.10	0.38	.0054427	33.6	14 27 52.06
15	227	142 8 51.1	8 23.1	144.15	0.25	.0053615	34.0	14 23 56.15
16	228	143 6 31.6	6 3.5	144.21	+0.11	.0052793	34.4	14 20 0.24
17	229	144 4 13.4	3 45.2	144.27	—0.03	.0051961	34.8	14 16 4.33
18	230	145 1 56.6	1 28.3	144.33	0.17	.0051120	35.2	14 12 8.43
19	231	145 59 41.4	59 13.0	144.40	0.30	.0050268	35.7	14 8 12.52
20	232	146 57 27.9	56 59.4	144.47	0.40	.0049406	36.2	14 4 16.62
21	233	147 55 16.1	44 47.5	144.54	0.48	.0048532	36.7	14 0 20.71
22	234	148 53 6.0	52 37.3	144.62	0.54	.0047645	37.2	13 56 24.80
23	235	149 50 57.6	50 28.8	144.69	0.57	.0046744	37.8	13 52 28.89
24	236	150 48 51.0	48 22.1	144.76	0.56	.0045828	38.5	13 48 32.99
25	237	151 46 46.2	46 17.2	144.84	0.52	.0044895	39.1	13 44 37.08
26	238	152 44 43.2	44 14.1	144.91	0.45	.0043947	39.8	13 40 41.17
27	239	153 42 42.0	42 12.8	144.99	0.36	.0042982	40.5	13 36 45.26
28	240	154 40 42.4	40 13.1	145.06	0.26	.0041998	41.3	13 32 49.35
29	241	155 38 44.6	38 15.2	145.13	0.14	.0040994	42.1	13 28 53.44
30	242	156 36 48.4	36 18.9	145.19	—0.01	.0039971	42.9	13 24 57.54
31	243	157 34 53.8	34 24.2	145.25	+0.12	.0038930	43.6	13 21 1.64
32	244	158 33 0.8	32 31.1	145.31	+0.25	0.0037873	44.3	13 17 5.73

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.				
							h	m		m	d
1	16' 23.9	-16' 17.9	60' 4.6	-1.70	59' 42.6	-1.93	1	18.0	2.32	1.3
2	16 11.3	16 4.2	59 18.2	2.11	58 52.0	2.23	2	12.0	2.19	2.3
3	15 56.7	15 49.1	58 24.6	2.30	57 56.7	2.32	3	3.1	2.06	3.3
4	15 41.5	15 34.1	57 28.9	2.29	57 1.7	2.22	3	52.0	2.00	4.3
5	15 27.0	15 20.3	56 35.6	2.11	56 10.9	1.98	4	39.3	1.95	5.3
6	15 14.1	15 8.4	55 48.1	1.82	55 27.3	1.64	5	25.8	1.93	6.3
7	15 3.3	14 58.9	55 8.7	1.45	54 52.4	1.25	6	11.9	1.93	7.3
8	14 55.1	14 52.0	54 38.5	1.05	54 27.1	0.85	6	58.2	1.94	8.3
9	14 49.6	14 47.8	54 18.1	0.65	54 11.5	0.45	7	45.0	1.95	9.3
10	14 46.6	14 46.1	54 7.2	-0.27	54 5.1	-0.09	8	32.1	1.97	10.3
11	14 46.1	14 46.6	54 5.1	+0.08	54 7.1	+0.24	9	19.5	1.98	11.3
12	14 47.6	14 49.1	54 10.9	0.38	54 16.3	0.51	10	7.0	1.97	12.3
13	14 51.0	14 53.2	54 23.2	0.63	54 31.4	0.73	10	54.3	1.96	13.3
14	14 55.8	14 58.6	54 40.8	0.82	54 51.2	0.90	11	41.2	1.94	14.3
15	15 1.7	15 5.0	55 2.5	0.98	55 14.6	1.04	12	27.6	1.92	15.3
16	15 8.5	15 12.1	55 27.4	1.09	55 40.9	1.14	13	13.6	1.92	16.3
17	15 15.9	15 19.9	55 54.9	1.19	56 9.4	1.23	13	59.7	1.93	17.3
18	15 24.0	15 28.2	56 24.4	1.27	56 39.9	1.30	14	46.3	1.96	18.3
19	15 32.5	15 36.9	56 55.7	1.33	57 11.8	1.36	15	33.9	2.02	19.3
20	15 41.4	15 46.0	57 28.3	1.38	57 45.1	1.40	16	23.3	2.10	20.3
21	15 50.6	15 55.2	58 2.0	1.41	58 19.0	1.41	17	15.0	2.21	21.3
22	15 59.8	16 4.2	58 35.8	1.39	58 52.3	1.35	18	9.3	2.32	22.3
23	16 8.6	16 12.6	59 8.1	1.29	59 23.1	1.20	19	6.3	2.42	23.3
24	16 16.4	16 19.5	59 36.9	1.09	59 49.2	0.94	20	5.3	2.48	24.3
25	16 22.5	16 24.7	59 59.4	0.75	60 7.2	0.54	21	5.1	2.49	25.3
26	16 26.0	16 26.6	60 12.3	+0.30	60 14.5	+0.04	22	4.3	2.44	26.3
27	16 26.3	16 25.1	60 13.3	-0.24	60 8.8	-0.52	23	2.0	2.35	27.3
28	16 22.9	16 19.9	60 0.9	0.80	59 49.6	1.07	23	57.2	2.25	28.3
29	16 15.9	16 11.2	59 35.2	1.32	59 17.8	1.55	δ			29.3
30	16 5.8	15 59.9	58 58.0	1.74	58 36.2	1.89	0	50.1	2.15	1.0
31	15 53.5	15 46.8	58 12.8	1.99	57 48.4	2.05	1	40.7	2.07	2.0
32	15 40.1	15 33.3	57 23.5	-2.07	56 58.7	-2.04	2	29.7	2.01	3.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 1.					SATURDAY 3.				
0	9 53 36.20	2.4006	N. 11° 6' 13.7	9.394	0	11 43 23.63	2.1842	N. 2 49' 33.6	10.504
1	9 56 0.09	2.3957	10 56 48.2	9.455	1	11 45 34.57	2.1805	2 38 45.3	10.504
2	9 58 23.68	2.3908	10 47 19.1	9.515	2	11 47 45.29	2.1769	2 27 57.1	10.503
3	10 0 46.97	2.3858	10 37 46.4	9.573	3	11 49 55.79	2.1733	2 17 9.0	10.500
4	10 3 9.97	2.3809	10 28 10.3	9.630	4	11 52 6.08	2.1697	2 6 21.1	10.496
5	10 5 32.67	2.3759	10 18 30.8	9.685	5	11 54 16.16	2.1662	1 55 33.4	10.492
6	10 7 55.08	2.3710	10 8 48.1	9.739	6	11 56 26.02	2.1627	1 44 46.1	10.486
7	10 10 17.19	2.3660	9 59 2.1	9.793	7	11 58 35.68	2.1593	1 33 59.1	10.479
8	10 12 39.00	2.3611	9 49 13.1	9.843	8	12 0 45.13	2.1559	1 23 12.6	10.471
9	10 15 0.52	2.3563	9 39 21.1	9.892	9	12 2 54.38	2.1525	1 12 26.5	10.463
10	10 17 21.75	2.3514	9 29 26.1	9.940	10	12 5 3.43	2.1492	1 1 41.0	10.454
11	10 19 42.68	2.3464	9 19 28.2	9.987	11	12 7 12.29	2.1460	0 50 56.1	10.443
12	10 22 3.32	2.3416	9 9 27.6	10.033	12	12 9 20.95	2.1428	0 40 11.8	10.432
13	10 24 23.67	2.3368	8 59 24.3	10.077	13	12 11 29.42	2.1397	0 29 28.2	10.420
14	10 26 43.73	2.3319	8 49 18.4	10.120	14	12 13 37.71	2.1365	0 18 45.4	10.407
15	10 29 3.50	2.3271	8 39 10.0	10.161	15	12 15 45.81	2.1334	N. 0 8 3.4	10.393
16	10 31 22.98	2.3223	8 28 59.1	10.201	16	12 17 53.72	2.1304	S. 0 2 37.7	10.378
17	10 33 42.17	2.3175	8 18 45.9	10.239	17	12 20 1.46	2.1275	0 13 17.9	10.363
18	10 36 1.08	2.3127	8 8 30.4	10.277	18	12 22 9.02	2.1246	0 23 57.2	10.346
19	10 38 19.70	2.3080	7 58 12.7	10.313	19	12 24 16.41	2.1217	0 34 35.4	10.327
20	10 40 38.04	2.3033	7 47 52.9	10.347	20	12 26 23.62	2.1189	0 45 12.5	10.308
21	10 42 56.10	2.2985	7 37 31.1	10.380	21	12 28 30.67	2.1161	0 55 48.5	10.289
22	10 45 13.87	2.2938	7 27 7.3	10.411	22	12 30 37.55	2.1133	1 6 23.2	10.269
23	10 47 31.36	2.2893	N. 7 16 41.6	10.442	23	12 32 44.27	2.1106	S. 1 16 56.8	10.248
FRIDAY 2.					SUNDAY 4.				
0	10 49 48.58	2.2847	N. 7 6 14.2	10.471	0	12 34 50.82	2.1079	S. 1 27 29.1	10.226
1	10 52 5.53	2.2802	6 55 45.1	10.499	1	12 36 57.22	2.1053	1 38 0.0	10.204
2	10 54 22.20	2.2756	6 45 14.3	10.526	2	12 39 3.46	2.1028	1 48 20.6	10.181
3	10 56 38.60	2.2710	6 34 41.9	10.552	3	12 41 9.55	2.1003	1 58 57.7	10.156
4	10 58 54.72	2.2665	6 24 8.1	10.576	4	12 43 15.50	2.0978	2 9 24.3	10.131
5	11 1 10.57	2.2620	6 13 32.9	10.598	5	12 45 21.30	2.0954	2 19 49.4	10.106
6	11 3 26.16	2.2576	6 2 56.3	10.619	6	12 47 26.95	2.0931	2 30 12.9	10.079
7	11 5 41.48	2.2532	5 52 18.5	10.640	7	12 49 32.46	2.0908	2 40 34.8	10.051
8	11 7 56.54	2.2489	5 41 39.5	10.659	8	12 51 37.84	2.0886	2 50 55.0	10.023
9	11 10 11.34	2.2446	5 30 59.4	10.677	9	12 53 43.08	2.0863	3 1 13.5	10.094
10	11 12 25.89	2.2403	5 20 18.3	10.693	10	12 55 48.19	2.0840	3 11 30.3	10.064
11	11 14 40.18	2.2360	5 9 36.2	10.708	11	12 57 53.16	2.0818	3 21 45.3	10.034
12	11 16 54.21	2.2319	4 58 53.3	10.722	12	12 59 58.01	2.0796	3 31 58.4	10.003
13	11 19 7.99	2.2278	4 48 9.5	10.736	13	1 2 2.74	2.0778	3 42 9.6	10.171
14	11 21 21.52	2.2236	4 37 25.0	10.748	14	1 3 4 7.34	2.0766	3 52 18.9	10.138
15	11 23 34.81	2.2194	4 26 39.8	10.758	15	1 3 6 11.82	2.0756	4 2 26.2	10.105
16	11 25 47.85	2.2153	4 15 54.0	10.768	16	1 3 8 16.19	2.0719	4 12 31.5	10.071
17	11 28 0.65	2.2112	4 5 7.6	10.777	17	1 3 10 20.45	2.0700	4 22 34.8	10.037
18	11 30 13.21	2.2073	3 54 20.8	10.784	18	1 3 12 24.59	2.0682	4 32 36.0	10.003
19	11 32 25.53	2.2033	3 43 33.6	10.790	19	1 3 14 28.63	2.0664	4 42 35.0	9.968
20	11 34 37.61	2.1994	3 32 46.0	10.796	20	1 3 16 32.56	2.0647	4 52 31.9	9.933
21	11 36 49.46	2.1956	3 21 58.2	10.799	21	1 3 18 36.39	2.0630	5 2 26.6	9.898
22	11 39 1.08	2.1917	3 11 10.1	10.803	22	1 3 20 40.12	2.0614	5 12 19.0	9.863
23	11 41 12.47	2.1879	3 0 21.9	10.804	23	1 3 22 43.75	2.0598	5 22 9.1	9.816
24	11 43 23.63	2.1842	N. 2 49 33.6	10.804	24	1 3 24 47.29	2.0582	S. 5 31 56.9	9.771

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 5.					WEDNESDAY 7.				
0	13 24 47.29	2.0362	S. 5 31' 56.9"	9.777	0	15 2 31.66	2.0277	S. 12° 25' 45.0"	7.278
1	13 26 50.73	2.0367	5 41 42.4	9.787	1	15 4 33.33	2.0278	12 32 50.8	7.218
2	13 28 54.09	2.0369	5 51 25.4	9.797	2	15 6 35.00	2.0280	12 40 10.8	7.161
3	13 30 57.36	2.0368	6 1 6.0	9.806	3	15 8 36.68	2.0283	12 47 18.0	7.087
4	13 33 0.55	2.0364	6 10 44.1	9.816	4	15 10 38.38	2.0284	12 54 21.3	7.022
5	13 35 3.66	2.0361	6 20 19.7	9.828	5	15 12 40.09	2.0287	13 1 20.7	6.968
6	13 37 6.68	2.0360	6 29 52.8	9.830	6	15 14 41.82	2.0289	13 8 16.3	6.923
7	13 39 9.63	2.0366	6 39 23.3	9.836	7	15 16 43.56	2.0292	13 15 8.0	6.888
8	13 41 12.50	2.0373	6 48 51.1	9.843	8	15 18 45.32	2.0295	13 21 55.7	6.763
9	13 43 15.30	2.0361	6 58 16.3	9.898	9	15 20 47.09	2.0298	13 28 39.5	6.697
10	13 45 18.03	2.0349	7 7 38.8	9.783	10	15 22 48.89	2.0301	13 35 19.3	6.630
11	13 47 20.69	2.0338	7 16 58.6	9.707	11	15 24 50.71	2.0305	13 41 55.1	6.563
12	13 49 23.28	2.0327	7 26 15.7	9.761	12	15 26 52.55	2.0309	13 48 26.9	6.496
13	13 51 25.81	2.0317	7 35 30.0	9.714	13	15 28 54.41	2.0313	13 54 54.7	6.429
14	13 53 28.28	2.0307	7 44 41.4	9.167	14	15 30 56.30	2.0317	14 1 18.4	6.361
15	13 55 30.69	2.0297	7 53 50.0	9.120	15	15 32 58.21	2.0321	14 7 38.0	6.293
16	13 57 33.04	2.0286	8 2 55.8	9.072	16	15 35 0.15	2.0325	14 13 53.5	6.226
17	13 59 35.34	2.0279	8 11 58.6	9.023	17	15 37 2.12	2.0330	14 20 4.9	6.166
18	14 1 37.59	2.0271	8 20 58.5	8.974	18	15 39 4.11	2.0335	14 26 12.2	6.087
19	14 3 39.79	2.0263	8 29 55.4	8.924	19	15 41 6.13	2.0340	14 32 15.3	6.017
20	14 5 41.94	2.0256	8 38 49.4	8.874	20	15 43 8.19	2.0345	14 38 14.2	5.947
21	14 7 44.05	2.0248	8 47 40.3	8.823	21	15 45 10.27	2.0350	14 44 9.0	5.877
22	14 9 46.11	2.0241	8 56 28.1	8.771	22	15 47 12.39	2.0355	14 49 59.5	5.807
23	14 11 48.13	2.0234	S. 9 5 12.8	8.719	23	15 49 14.54	2.0362	S. 14 55 45.8	5.736
TUESDAY 6.					THURSDAY 8.				
0	14 13 50.12	2.0226	S. 9 13 54.4	8.667	0	15 51 16.73	2.0367	S. 15 1 27.8	5.665
1	14 15 52.07	2.0228	9 22 32.8	8.614	1	15 53 18.95	2.0373	15 7 5.5	5.603
2	14 17 53.99	2.0218	9 31 8.1	8.561	2	15 55 21.20	2.0378	15 12 38.9	5.531
3	14 19 55.88	2.0213	9 39 40.2	8.508	3	15 57 23.49	2.0384	15 18 8.0	5.448
4	14 21 57.74	2.0206	9 48 9.0	8.454	4	15 59 25.81	2.0390	15 23 32.7	5.376
5	14 23 59.57	2.0200	9 56 34.6	8.399	5	16 1 28.17	2.0395	15 28 53.1	5.303
6	14 26 1.38	2.0199	10 4 56.9	8.344	6	16 3 30.56	2.0402	15 34 9.1	5.230
7	14 28 3.17	2.0196	10 13 15.9	8.288	7	16 5 33.00	2.0409	15 39 20.8	5.157
8	14 30 4.93	2.0192	10 21 31.5	8.233	8	16 7 35.47	2.0415	15 44 28.0	5.083
9	14 32 6.67	2.0189	10 29 43.8	8.178	9	16 9 37.98	2.0422	15 49 30.8	5.009
10	14 34 8.40	2.0186	10 37 52.6	8.119	10	16 11 40.53	2.0429	15 54 29.1	4.936
11	14 36 10.11	2.0183	10 45 58.0	8.062	11	16 13 43.12	2.0436	15 59 23.0	4.861
12	14 38 11.80	2.0181	10 54 0.0	8.004	12	16 15 45.76	2.0443	16 4 12.4	4.786
13	14 40 13.48	2.0179	11 1 58.5	7.946	13	16 17 48.43	2.0449	16 8 57.3	4.711
14	14 42 15.15	2.0176	11 9 53.5	7.887	14	16 19 51.15	2.0456	16 13 37.7	4.636
15	14 44 16.81	2.0177	11 17 44.9	7.827	15	16 21 53.91	2.0463	16 18 13.6	4.560
16	14 46 18.47	2.0175	11 25 32.8	7.768	16	16 23 56.71	2.0470	16 22 44.9	4.484
17	14 48 20.12	2.0174	11 33 17.1	7.708	17	16 25 59.55	2.0477	16 27 11.7	4.408
18	14 50 21.76	2.0174	11 40 57.8	7.648	18	16 28 2.43	2.0485	16 31 33.9	4.332
19	14 52 23.40	2.0174	11 48 34.9	7.587	19	16 30 5.36	2.0493	16 35 51.5	4.255
20	14 54 25.05	2.0175	11 56 8.3	7.526	20	16 32 8.33	2.0500	16 40 4.5	4.178
21	14 56 26.70	2.0175	12 3 38.1	7.465	21	16 34 11.34	2.0508	16 44 12.9	4.101
22	14 58 28.35	2.0176	12 11 4.1	7.403	22	16 36 14.40	2.0515	16 48 16.6	4.024
23	15 0 30.00	2.0176	12 18 26.4	7.341	23	16 38 17.50	2.0520	16 52 15.7	3.946
24	15 2 31.66	2.0177	S. 12 25 45.0	7.278	24	16 40 20.64	2.0527	S. 16 56 10.1	3.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 9.					SUNDAY 11.				
0	16 ^h 40 ^m 20.64 ^s	2.0527	S. 16° 56' 10.1"	3.886	0	18 ^h 19 ^m 36.49 ^s	2.0784	S. 18° 28' 18.5"	0.084
1	16 42 23.83	2.0536	16 59 59.9	3.790	1	18 21 41.26	2.0796	18 28 10.9	0.169
2	16 44 27.06	2.0543	17 3 44.9	3.712	2	18 23 46.04	2.0798	18 27 58.2	0.264
3	16 46 30.33	2.0549	17 7 25.2	3.633	3	18 25 50.83	2.0800	18 27 40.4	0.339
4	16 48 33.65	2.0556	17 11 0.8	3.554	4	18 27 55.64	2.0802	18 27 17.5	0.424
5	16 50 37.01	2.0563	17 14 31.6	3.475	5	18 30 0.46	2.0804	18 26 49.5	0.509
6	16 52 40.41	2.0570	17 17 57.7	3.396	6	18 32 5.29	2.0806	18 26 16.4	0.594
7	16 54 43.85	2.0578	17 21 19.0	3.316	7	18 34 10.13	2.0807	18 25 38.2	0.679
8	16 56 47.34	2.0585	17 24 35.6	3.236	8	18 36 14.97	2.0808	18 24 55.0	0.764
9	16 58 50.87	2.0592	17 27 47.3	3.156	9	18 38 19.82	2.0809	18 24 6.6	0.849
10	17 0 54.44	2.0599	17 30 54.3	3.076	10	18 40 24.68	2.0810	18 23 13.1	0.934
11	17 2 58.05	2.0606	17 33 56.5	2.996	11	18 42 29.54	2.0811	18 22 14.5	1.018
12	17 5 1.71	2.0613	17 36 53.8	2.915	12	18 44 34.41	2.0811	18 21 10.9	1.103
13	17 7 5.40	2.0619	17 39 46.3	2.834	13	18 46 39.27	2.0811	18 20 2.1	1.188
14	17 9 9.14	2.0626	17 42 33.9	2.753	14	18 48 44.14	2.0812	18 18 48.3	1.272
15	17 11 12.92	2.0633	17 45 16.6	2.672	15	18 50 49.01	2.0812	18 17 29.4	1.356
16	17 13 16.74	2.0640	17 47 54.5	2.591	16	18 52 53.88	2.0811	18 16 5.4	1.443
17	17 15 20.60	2.0647	17 50 27.5	2.509	17	18 54 58.75	2.0811	18 14 36.3	1.528
18	17 17 24.50	2.0653	17 52 55.6	2.428	18	18 57 3.61	2.0810	18 13 2.1	1.612
19	17 19 28.44	2.0659	17 55 18.8	2.346	19	18 59 8.47	2.0809	18 11 22.9	1.697
20	17 21 32.41	2.0666	17 57 37.1	2.264	20	19 1 13.32	2.0808	18 9 38.6	1.782
21	17 23 36.42	2.0672	17 59 50.4	2.182	21	19 3 18.16	2.0807	18 7 49.2	1.866
22	17 25 40.47	2.0678	18 1 58.8	2.100	22	19 5 23.00	2.0806	18 5 54.8	1.950
23	17 27 44.56	2.0684	S. 18 4 2.3	2.017	23	19 7 27.83	2.0804	S. 18 3 55.4	2.033
SATURDAY 10.					MONDAY 12.				
0	17 29 48.68	2.0690	S. 18 6 0.8	1.934	0	19 9 32.65	2.0802	S. 18 1 50.9	2.117
1	17 31 52.84	2.0696	18 7 54.3	1.851	1	19 11 37.46	2.0800	17 59 41.4	2.201
2	17 33 57.03	2.0702	18 9 42.9	1.768	2	19 13 42.25	2.0798	17 57 26.8	2.285
3	17 36 1.26	2.0708	18 11 26.5	1.685	3	19 15 47.03	2.0796	17 55 7.3	2.369
4	17 38 5.52	2.0713	18 13 5.1	1.602	4	19 17 51.80	2.0793	17 52 42.7	2.451
5	17 40 9.81	2.0718	18 14 38.7	1.518	5	19 19 56.55	2.0790	17 50 13.1	2.534
6	17 42 14.14	2.0723	18 16 7.3	1.435	6	19 22 1.28	2.0788	17 47 38.6	2.617
7	17 44 18.49	2.0728	18 17 30.9	1.351	7	19 24 6.00	2.0785	17 44 59.1	2.700
8	17 46 22.88	2.0733	18 18 49.4	1.267	8	19 26 10.70	2.0782	17 42 14.6	2.783
9	17 48 27.30	2.0738	18 20 2.9	1.183	9	19 28 15.38	2.0778	17 39 25.1	2.866
10	17 50 31.74	2.0743	18 21 11.4	1.099	10	19 30 20.04	2.0775	17 36 30.7	2.949
11	17 52 36.21	2.0748	18 22 14.8	1.015	11	19 32 24.68	2.0772	17 33 31.4	3.031
12	17 54 40.71	2.0753	18 23 13.2	0.931	12	19 34 29.30	2.0768	17 30 27.1	3.112
13	17 56 45.24	2.0757	18 24 6.5	0.847	13	19 36 33.90	2.0764	17 27 17.9	3.196
14	17 58 49.79	2.0761	18 24 54.8	0.763	14	19 38 38.47	2.0760	17 24 3.7	3.277
15	18 0 54.36	2.0764	18 25 38.0	0.678	15	19 40 43.01	2.0756	17 20 44.7	3.358
16	18 2 58.96	2.0768	18 26 16.2	0.593	16	19 42 47.53	2.0751	17 17 20.8	3.439
17	18 5 3.58	2.0772	18 26 49.2	0.508	17	19 44 52.02	2.0746	17 13 52.0	3.520
18	18 7 8.22	2.0776	18 27 17.2	0.423	18	19 46 56.48	2.0742	17 10 18.4	3.601
19	18 9 12.88	2.0779	18 27 40.1	0.339	19	19 49 0.91	2.0737	17 6 39.9	3.682
20	18 11 17.57	2.0783	18 27 58.0	0.254	20	19 51 5.32	2.0732	17 2 56.6	3.763
21	18 13 22.28	2.0786	18 28 10.7	0.170	21	19 53 9.70	2.0727	16 59 8.4	3.843
22	18 15 27.00	2.0789	18 28 18.4	0.085	22	19 55 14.04	2.0722	16 55 15.5	3.928
23	18 17 31.74	2.0791	18 28 21.0	0.001	23	19 57 18.35	2.0716	16 51 17.8	4.009
24	18 19 36.49	2.0794	S. 18 28 18.5	0.084	24	19 59 22.63	2.0711	S. 16 47 15.3	4.092

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
TUESDAY 13.					THURSDAY 15.				
0	19 59 22.63	2.0711	S. 16° 47' 15.3	4.089	0	21 37 59.52	2.0308	S. 12° 6' 14.5	7.472
1	20 1 26.88	2.0705	16 43 8.0	4.161	1	21 40 1.71	2.0302	11 58 44.4	7.533
2	20 3 31.09	2.0699	16 38 56.0	4.240	2	21 42 3.86	2.0305	11 51 10.7	7.591
3	20 5 35.27	2.0693	16 34 39.3	4.318	3	21 44 5.97	2.0308	11 43 33.5	7.650
4	20 7 39.41	2.0687	16 30 17.9	4.396	4	21 46 8.03	2.0311	11 35 52.7	7.708
5	20 9 43.51	2.0681	16 25 51.8	4.471	5	21 48 10.06	2.0315	11 28 8.5	7.765
6	20 11 47.58	2.0674	16 21 21.0	4.552	6	21 50 12.05	2.0328	11 20 20.9	7.823
7	20 13 51.61	2.0668	16 16 45.6	4.628	7	21 52 14.00	2.0322	11 12 29.9	7.878
8	20 15 55.60	2.0661	16 12 5.5	4.706	8	21 54 15.91	2.0316	11 4 35.5	7.934
9	20 17 59.55	2.0655	16 7 20.8	4.783	9	21 56 17.79	2.0310	10 56 37.8	7.990
10	20 20 3.46	2.0648	16 2 31.5	4.860	10	21 58 19.63	2.0304	10 48 36.7	8.044
11	20 22 7.33	2.0642	15 57 37.6	4.936	11	22 0 21.44	2.0298	10 40 32.4	8.098
12	20 24 11.16	2.0635	15 52 39.2	5.012	12	22 2 23.21	2.0293	10 32 24.9	8.152
13	20 26 14.95	2.0628	15 47 36.3	5.087	13	22 4 24.95	2.0288	10 24 14.2	8.205
14	20 28 18.69	2.0621	15 42 28.8	5.163	14	22 6 26.66	2.0283	10 16 0.3	8.257
15	20 30 22.40	2.0614	15 37 16.8	5.237	15	22 8 28.34	2.0278	10 7 43.3	8.309
16	20 32 26.06	2.0607	15 32 0.4	5.311	16	22 10 29.99	2.0273	9 59 23.2	8.360
17	20 34 29.68	2.0599	15 26 39.5	5.385	17	22 12 31.61	2.0268	9 51 0.0	8.411
18	20 36 33.25	2.0592	15 21 14.2	5.459	18	22 14 33.20	2.0263	9 42 33.8	8.461
19	20 38 36.78	2.0585	15 15 44.5	5.533	19	22 16 34.76	2.0258	9 34 4.6	8.511
20	20 40 40.27	2.0578	15 10 10.3	5.606	20	22 18 36.30	2.0254	9 25 32.5	8.560
21	20 42 43.71	2.0570	15 4 31.8	5.678	21	22 20 37.82	2.0251	9 16 57.4	8.608
22	20 44 47.11	2.0563	14 58 48.9	5.750	22	22 22 39.31	2.0247	9 8 19.5	8.656
23	20 46 50.46	2.0555	S. 14 53 1.7	5.822	23	22 24 40.78	2.0243	S. 8 59 38.8	8.703
WEDNESDAY 14.					FRIDAY 16.				
0	20 48 53.77	2.0548	S. 14 47 10.3	5.895	0	22 26 42.22	2.0239	S. 8 50 55.2	8.749
1	20 50 57.03	2.0540	14 41 14.6	5.964	1	22 28 43.64	2.0236	8 42 8.9	8.795
2	20 53 0.25	2.0533	14 35 14.6	6.035	2	22 30 45.05	2.0233	8 33 19.8	8.840
3	20 55 3.42	2.0525	14 29 10.4	6.105	3	22 32 46.44	2.0230	8 24 28.1	8.884
4	20 57 6.55	2.0517	14 23 2.0	6.175	4	22 34 47.81	2.0227	8 15 33.7	8.928
5	20 59 9.63	2.0509	14 16 49.3	6.244	5	22 36 49.17	2.0225	8 6 36.7	8.971
6	21 1 12.66	2.0502	14 10 32.5	6.313	6	22 38 50.51	2.0223	7 57 37.2	9.013
7	21 3 15.65	2.0494	14 4 11.7	6.381	7	22 40 51.85	2.0223	7 48 35.1	9.055
8	21 5 18.59	2.0487	13 57 46.8	6.449	8	22 42 53.17	2.0220	7 39 30.5	9.096
9	21 7 21.49	2.0479	13 51 17.8	6.517	9	22 44 54.48	2.0218	7 30 23.5	9.137
10	21 9 24.34	2.0471	13 44 44.8	6.584	10	22 46 55.79	2.0217	7 21 14.0	9.177
11	21 11 27.14	2.0463	13 38 7.8	6.650	11	22 48 57.09	2.0216	7 12 2.2	9.211
12	21 13 29.90	2.0456	13 31 26.9	6.716	12	22 50 58.38	2.0215	7 2 48.0	9.255
13	21 15 32.61	2.0448	13 24 41.9	6.783	13	22 52 59.67	2.0215	6 53 31.5	9.293
14	21 17 35.28	2.0441	13 17 53.0	6.848	14	22 55 0.96	2.0214	6 44 12.8	9.331
15	21 19 37.90	2.0433	13 11 0.2	6.913	15	22 57 2.24	2.0214	6 34 51.8	9.368
16	21 21 40.48	2.0426	13 4 3.6	6.976	16	22 59 3.53	2.0215	6 25 28.7	9.403
17	21 23 43.01	2.0418	12 57 3.1	7.040	17	23 1 4.82	2.0216	6 16 3.4	9.438
18	21 25 45.50	2.0411	12 49 58.8	7.103	18	23 3 6.12	2.0217	6 6 36.1	9.473
19	21 27 47.95	2.0404	12 42 50.7	7.166	19	23 5 7.43	2.0218	5 57 6.7	9.508
20	21 29 50.35	2.0397	12 35 38.8	7.228	20	23 7 8.74	2.0220	5 47 35.2	9.541
21	21 31 52.71	2.0389	12 28 23.2	7.290	21	23 9 10.06	2.0223	5 38 1.8	9.573
22	21 33 55.02	2.0382	12 21 4.0	7.351	22	23 11 11.40	2.0224	5 28 26.4	9.605
23	21 35 57.29	2.0375	12 13 41.1	7.413	23	23 13 12.75	2.0226	5 18 49.2	9.636
24	21 37 59.52	2.0368	S. 12 6 14.5	7.472	24	23 15 14.11	2.0229	S. 5 9 10.1	9.666

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 17.					MONDAY 19.				
0	^h 23 ^m 15 ^s 14.11	2.0228	S. 5° 9' 10.1	9.086	0	^h 0 53 18.59	2.0782	N. 2° 55' 47.6	10.341
1	23 17 15.49	2.0228	4 59 29.2	9.086	1	0 55 23.34	2.0803	3 6 1.8	10.222
2	23 19 16.90	2.0236	4 49 46.6	9.735	2	0 57 28.22	2.0824	3 16 15.6	10.224
3	23 21 18.32	2.0239	4 40 2.2	9.764	3	0 59 33.23	2.0846	3 26 28.9	10.315
4	23 23 19.77	2.0243	4 30 16.1	9.781	4	1 1 38.37	2.0869	3 36 41.5	10.285
5	23 25 21.24	2.0248	4 20 28.4	9.808	5	1 3 43.65	2.0892	3 46 53.4	10.183
6	23 27 22.74	2.0252	4 10 39.1	9.834	6	1 5 49.07	2.0915	3 57 4.7	10.181
7	23 29 24.26	2.0257	4 0 48.3	9.869	7	1 7 54.63	2.0938	4 7 15.3	10.169
8	23 31 25.82	2.0262	3 50 56.0	9.884	8	1 10 0.33	2.0962	4 17 25.0	10.185
9	23 33 27.41	2.0268	3 41 2.2	9.908	9	1 12 6.18	2.0987	4 27 33.9	10.140
10	23 35 29.04	2.0274	3 31 7.0	9.931	10	1 14 12.17	2.1012	4 37 41.8	10.124
11	23 37 30.70	2.0280	3 21 10.5	9.953	11	1 16 18.32	2.1038	4 47 48.8	10.108
12	23 39 32.40	2.0287	3 11 12.6	9.975	12	1 18 24.62	2.1063	4 57 54.7	10.091
13	23 41 34.14	2.0294	3 1 13.4	9.997	13	1 20 31.08	2.1089	5 7 59.6	10.072
14	23 43 35.93	2.0301	2 51 13.0	10.017	14	1 22 37.69	2.1116	5 18 3.3	10.053
15	23 45 37.76	2.0309	2 41 11.4	10.036	15	1 24 44.46	2.1143	5 28 5.8	10.033
16	23 47 39.64	2.0317	2 31 8.7	10.056	16	1 26 51.40	2.1170	5 38 7.2	10.012
17	23 49 41.57	2.0326	2 21 4.8	10.073	17	1 28 58.50	2.1198	5 48 7.4	9.990
18	23 51 43.55	2.0335	2 10 59.9	10.090	18	1 31 5.77	2.1226	5 58 6.2	9.967
19	23 53 45.59	2.0344	2 0 54.0	10.107	19	1 33 13.21	2.1264	6 8 3.5	9.943
20	23 55 47.68	2.0353	1 50 47.1	10.123	20	1 35 20.83	2.1284	6 17 59.4	9.918
21	23 57 49.83	2.0363	1 40 39.3	10.138	21	1 37 28.62	2.1313	6 27 53.8	9.893
22	23 59 52.04	2.0373	1 30 30.6	10.152	22	1 39 36.58	2.1343	6 37 46.6	9.867
23	0 1 54.31	2.0384	S. 1° 20' 21.0	10.166	23	1 41 44.72	2.1373	N. 6° 47' 37.7	9.839
SUNDAY 18.					TUESDAY 20.				
0	0 3 56.65	2.0395	S. 1° 10' 10.7	10.178	0	1 43 53.05	2.1403	N. 6° 57' 27.1	9.810
1	0 5 59.05	2.0407	0 59 59.6	10.190	1	1 46 1.56	2.1434	7 7 14.8	9.781
2	0 8 1.53	2.0419	0 49 47.9	10.201	2	1 48 10.26	2.1466	7 17 0.8	9.751
3	0 10 4.08	2.0432	0 39 35.5	10.212	3	1 50 19.14	2.1497	7 26 44.9	9.720
4	0 12 6.71	2.0445	0 29 22.5	10.221	4	1 52 28.22	2.1529	7 36 27.2	9.689
5	0 14 9.42	2.0458	0 19 9.0	10.229	5	1 54 37.49	2.1562	7 46 7.5	9.654
6	0 16 12.20	2.0471	S. 0° 8' 55.0	10.237	6	1 56 46.96	2.1595	7 55 45.7	9.620
7	0 18 15.06	2.0484	N. 0° 1' 19.5	10.245	7	1 58 56.62	2.1628	8 5 21.9	9.585
8	0 20 18.01	2.0498	0 11 34.4	10.251	8	2 1 6.49	2.1661	8 14 56.0	9.549
9	0 22 21.05	2.0513	0 21 49.6	10.256	9	2 3 16.56	2.1695	8 24 27.9	9.512
10	0 24 24.17	2.0528	0 32 5.1	10.261	10	2 5 26.83	2.1729	8 33 57.5	9.474
11	0 26 27.38	2.0543	0 42 20.9	10.266	11	2 7 37.31	2.1763	8 43 24.8	9.435
12	0 28 30.69	2.0559	0 52 36.9	10.268	12	2 9 47.99	2.1798	8 52 49.7	9.396
13	0 30 34.10	2.0576	1 2 53.1	10.270	13	2 11 58.89	2.1834	9 2 12.2	9.354
14	0 32 37.60	2.0592	1 13 9.3	10.271	14	2 14 10.00	2.1869	9 11 32.2	9.312
15	0 34 41.20	2.0609	1 23 25.6	10.272	15	2 16 21.32	2.1905	9 20 49.7	9.270
16	0 36 44.91	2.0626	1 33 42.0	10.273	16	2 18 32.86	2.1941	9 30 4.6	9.226
17	0 38 48.72	2.0644	1 43 58.3	10.273	17	2 20 44.62	2.1978	9 39 16.8	9.181
18	0 40 52.64	2.0663	1 54 14.6	10.271	18	2 22 56.60	2.2015	9 48 26.3	9.135
19	0 42 56.67	2.0682	2 4 30.7	10.268	19	2 25 8.80	2.2052	9 57 33.0	9.088
20	0 45 0.82	2.0701	2 14 46.6	10.264	20	2 27 21.22	2.2090	10 6 36.9	9.040
21	0 47 5.08	2.0720	2 25 2.3	10.260	21	2 29 33.87	2.2128	10 15 37.9	8.992
22	0 49 9.46	2.0740	2 35 17.8	10.255	22	2 31 46.75	2.2166	10 24 35.9	8.943
23	0 51 13.96	2.0761	2 45 32.9	10.248	23	2 33 59.85	2.2203	10 33 30.9	8.891
24	0 53 18.59	2.0782	N. 2° 55' 47.6	10.241	24	2 36 13.19	2.2242	N. 10° 42' 22.8	8.839

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 21.					FRIDAY 23.				
0	2 36 13.19	2.2949	N.10° 42' 22.8"	8.880	0	4 27 43.69	2.4230	N.16° 27' 31.7"	5.168
1	2 38 26.76	2.2951	10 51 11.5	8.786	1	4 30 9.19	2.4269	16 32 37.8	5.092
2	2 40 40.56	2.2950	10 59 57.1	8.782	2	4 32 34.92	2.4308	16 37 37.9	4.990
3	2 42 54.60	2.2950	11 8 39.4	8.678	3	4 35 0.88	2.4347	16 42 31.8	4.847
4	2 45 8.87	2.2950	11 17 18.4	8.622	4	4 37 27.08	2.4385	16 47 19.6	4.743
5	2 47 23.38	2.2428	11 25 54.0	8.565	5	4 39 53.51	2.4423	16 52 1.1	4.630
6	2 49 38.14	2.2479	11 34 26.2	8.506	6	4 42 20.16	2.4461	16 56 36.4	4.524
7	2 51 53.13	2.2519	11 42 54.8	8.447	7	4 44 47.04	2.4498	17 1 5.2	4.428
8	2 54 8.37	2.2560	11 51 19.9	8.387	8	4 47 14.14	2.4536	17 5 27.7	4.321
9	2 56 23.85	2.2608	11 59 41.3	8.327	9	4 49 41.47	2.4573	17 9 43.7	4.213
10	2 58 39.57	2.2641	12 7 59.1	8.266	10	4 52 9.01	2.4609	17 13 53.3	4.104
11	3 0 55.54	2.2683	12 16 13.1	8.203	11	4 54 36.76	2.4644	17 17 56.2	3.994
12	3 3 11.76	2.2724	12 24 23.3	8.138	12	4 57 4.73	2.4679	17 21 52.6	3.884
13	3 5 28.23	2.2768	12 32 29.6	8.072	13	4 59 32.91	2.4714	17 25 42.3	3.773
14	3 7 44.94	2.2808	12 40 32.0	8.006	14	5 2 1.30	2.4748	17 29 25.4	3.661
15	3 10 1.90	2.2848	12 48 30.4	7.939	15	5 4 29.89	2.4782	17 33 1.7	3.548
16	3 12 19.12	2.2890	12 56 24.7	7.871	16	5 6 58.68	2.4816	17 36 31.2	3.435
17	3 14 36.58	2.2932	13 4 14.9	7.802	17	5 9 27.67	2.4848	17 39 53.9	3.321
18	3 16 54.30	2.2974	13 12 0.9	7.732	18	5 11 56.85	2.4880	17 43 9.7	3.206
19	3 19 12.27	2.3016	13 19 42.7	7.660	19	5 14 26.23	2.4912	17 46 18.6	3.091
20	3 21 30.49	2.3058	13 27 20.1	7.587	20	5 16 55.79	2.4943	17 49 20.6	2.976
21	3 23 48.97	2.3101	13 34 53.2	7.514	21	5 19 25.53	2.4975	17 52 15.6	2.860
22	3 26 7.70	2.3143	13 42 21.8	7.440	22	5 21 55.46	2.4998	17 55 3.5	2.740
23	3 28 26.68	2.3186	N.13° 49' 46.0"	7.365	23	5 24 25.57	2.5033	N.17° 57' 44.4"	2.622
THURSDAY 22.					SATURDAY 24.				
0	3 30 45.92	2.3227	N.13° 57' 5.6"	7.290	0	5 26 55.85	2.5061	N.18° 0' 18.1"	2.503
1	3 33 5.41	2.3270	14 4 20.6	7.211	1	5 29 26.30	2.5099	18 2 44.7	2.393
2	3 35 25.16	2.3313	14 11 30.9	7.132	2	5 31 56.92	2.5116	18 5 4.1	2.283
3	3 37 45.17	2.3356	14 18 36.5	7.053	3	5 34 27.70	2.5143	18 7 16.3	2.143
4	3 40 5.43	2.3398	14 25 37.2	6.973	4	5 36 58.64	2.5160	18 9 21.3	2.023
5	3 42 25.95	2.3441	14 32 33.1	6.891	5	5 39 29.73	2.5194	18 11 19.0	1.900
6	3 44 46.72	2.3483	14 39 24.1	6.806	6	5 42 0.97	2.5219	18 13 9.3	1.778
7	3 47 7.75	2.3526	14 46 10.1	6.724	7	5 44 32.36	2.5244	18 14 52.3	1.655
8	3 49 29.03	2.3568	14 52 51.0	6.639	8	5 47 3.89	2.5266	18 16 27.9	1.532
9	3 51 50.57	2.3611	14 59 26.9	6.554	9	5 49 35.55	2.5288	18 17 56.1	1.408
10	3 54 12.36	2.3653	15 5 57.6	6.468	10	5 52 7.35	2.5310	18 19 16.8	1.284
11	3 56 34.40	2.3696	15 12 23.0	6.380	11	5 54 39.28	2.5332	18 20 30.1	1.160
12	3 58 56.70	2.3737	15 18 43.2	6.292	12	5 57 11.33	2.5352	18 21 35.9	1.034
13	4 1 19.25	2.3779	15 24 58.0	6.203	13	5 59 43.50	2.5371	18 22 34.2	0.908
14	4 4 42.05	2.3821	15 31 7.5	6.112	14	6 2 15.78	2.5390	18 23 24.9	0.788
15	4 6 5.10	2.3863	15 37 11.5	6.020	15	6 4 48.17	2.5408	18 24 8.1	0.667
16	4 8 28.41	2.3905	15 43 9.9	5.927	16	6 7 20.67	2.5426	18 24 43.7	0.541
17	4 10 51.96	2.3948	15 49 2.8	5.834	17	6 9 53.27	2.5441	18 25 11.8	0.408
18	4 13 15.76	2.3997	15 54 50.0	5.740	18	6 12 25.96	2.5456	18 25 32.3	0.278
19	4 15 39.81	2.4028	16 0 31.5	5.644	19	6 14 58.74	2.5471	18 25 45.2	0.151
20	4 18 4.10	2.4060	16 6 7.3	5.547	20	6 17 31.61	2.5485	18 25 50.4	0.024
21	4 20 28.63	2.4109	16 11 37.2	5.450	21	6 20 4.56	2.5498	18 25 48.1	0.108
22	4 22 53.41	2.4160	16 17 1.3	5.352	22	6 22 37.58	2.5510	18 25 38.1	0.230
23	4 25 18.43	2.4190	16 22 19.5	5.258	23	6 25 10.67	2.5521	18 25 20.4	0.348
24	4 27 43.69	2.4230	N.16° 27' 31.7"	5.168	24	6 27 43.83	2.5532	N.18° 24' 55.1"	0.486

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 25.					TUESDAY 27.				
0	6 27 43.83	2.5532	N.18° 24' 55.1"	0.486	0	8 29 52.60	2.5086	N.15° 37' 17.5"	6.319
1	6 30 17.05	2.5542	18 24 22.0	0.615	1	8 32 22.85	2.5028	15 30 55.2	6.424
2	6 32 50.33	2.5550	18 23 41.3	0.743	2	8 34 52.94	2.5000	15 24 26.6	6.529
3	6 35 23.66	2.5558	18 22 52.9	0.871	3	8 37 22.86	2.4972	15 17 51.7	6.633
4	6 37 57.03	2.5565	18 21 56.8	0.999	4	8 39 52.60	2.4942	15 11 10.7	6.736
5	6 40 30.44	2.5573	18 20 52.9	1.128	5	8 42 22.16	2.4912	15 4 23.5	6.837
6	6 43 3.89	2.5577	18 19 41.3	1.256	6	8 44 51.54	2.4882	14 57 30.3	6.937
7	6 45 37.36	2.5581	18 18 22.0	1.385	7	8 47 20.74	2.4851	14 50 31.1	7.036
8	6 48 10.86	2.5585	18 16 55.1	1.513	8	8 49 49.75	2.4820	14 43 26.0	7.134
9	6 50 44.38	2.5588	18 15 20.4	1.642	9	8 52 18.57	2.4788	14 36 15.0	7.232
10	6 53 17.91	2.5589	18 13 38.0	1.770	10	8 54 47.20	2.4756	14 28 58.2	7.328
11	6 55 51.45	2.5590	18 11 47.9	1.898	11	8 57 15.63	2.4723	14 21 35.6	7.423
12	6 58 24.99	2.5591	18 9 50.2	2.026	12	8 59 43.87	2.4690	14 14 7.4	7.517
13	7 0 58.53	2.5590	18 7 44.8	2.154	13	9 2 11.91	2.4656	14 6 33.6	7.609
14	7 3 32.07	2.5588	18 5 31.7	2.281	14	9 4 39.74	2.4622	13 58 54.3	7.700
15	7 6 5.59	2.5585	18 3 11.0	2.408	15	9 7 7.37	2.4588	13 51 9.5	7.791
16	7 8 39.09	2.5582	18 0 42.8	2.535	16	9 9 34.80	2.4553	13 43 19.3	7.880
17	7 11 12.57	2.5578	17 58 6.9	2.661	17	9 12 2.02	2.4518	13 35 23.8	7.968
18	7 13 46.02	2.5573	17 55 23.5	2.787	18	9 14 29.02	2.4483	13 27 23.1	8.056
19	7 16 19.44	2.5567	17 52 32.5	2.913	19	9 16 55.81	2.4448	13 19 17.2	8.144
20	7 18 52.82	2.5560	17 49 34.0	3.038	20	9 19 22.39	2.4412	13 11 6.3	8.234
21	7 21 26.16	2.5553	17 46 27.9	3.163	21	9 21 48.75	2.4375	13 2 50.3	8.308
22	7 23 59.45	2.5544	17 43 14.4	3.288	22	9 24 14.89	2.4339	12 54 29.4	8.390
23	7 26 32.68	2.5534	N.17° 39' 53.4"	3.412	23	9 26 40.82	2.4303	N.12° 46' 3.6"	8.470
MONDAY 26.					WEDNESDAY 28.				
0	7 29 5.86	2.5524	N.17° 36' 25.0"	3.536	0	9 29 6.52	2.4268	N.12° 37' 33.0"	8.549
1	7 31 38.98	2.5514	17 32 49.1	3.660	1	9 31 32.00	2.4228	12 28 57.7	8.626
2	7 34 12.03	2.5502	17 29 5.8	3.783	2	9 33 57.26	2.4191	12 20 17.7	8.705
3	7 36 45.00	2.5489	17 25 15.1	3.906	3	9 36 22.29	2.4153	12 11 33.2	8.780
4	7 39 17.90	2.5476	17 21 17.1	4.028	4	9 38 47.10	2.4116	12 2 44.2	8.854
5	7 41 50.71	2.5462	17 17 11.8	4.149	5	9 41 11.68	2.4078	11 53 50.8	8.926
6	7 44 23.44	2.5447	17 12 59.2	4.270	6	9 43 36.03	2.4040	11 44 53.1	8.997
7	7 46 56.08	2.5432	17 8 39.4	4.390	7	9 46 0.15	2.4002	11 35 51.1	9.068
8	7 49 28.62	2.5416	17 4 12.4	4.510	8	9 48 24.05	2.3964	11 26 44.9	9.137
9	7 52 1.06	2.5399	16 59 38.2	4.629	9	9 50 47.72	2.3926	11 17 34.7	9.204
10	7 54 33.39	2.5380	16 54 56.9	4.747	10	9 53 11.15	2.3887	11 8 20.4	9.270
11	7 57 5.61	2.5361	16 50 8.5	4.866	11	9 55 34.35	2.3848	10 59 2.2	9.335
12	7 59 37.72	2.5342	16 45 13.1	4.981	12	9 57 57.32	2.3810	10 49 40.2	9.399
13	8 2 9.71	2.5322	16 40 10.7	5.097	13	10 0 20.06	2.3771	10 40 14.4	9.461
14	8 4 41.58	2.5301	16 35 1.4	5.212	14	10 2 42.57	2.3732	10 30 44.9	9.522
15	8 7 13.32	2.5279	16 29 45.2	5.327	15	10 5 4.84	2.3693	10 21 11.7	9.583
16	8 9 44.93	2.5257	16 24 22.1	5.440	16	10 7 26.88	2.3654	10 11 35.0	9.640
17	8 12 16.41	2.5234	16 18 52.3	5.553	17	10 9 48.69	2.3615	10 1 54.8	9.697
18	8 14 47.74	2.5210	16 13 15.7	5.666	18	10 12 10.26	2.3576	9 52 11.3	9.753
19	8 17 18.93	2.5186	16 7 32.4	5.777	19	10 14 31.60	2.3537	9 42 24.5	9.807
20	8 19 49.97	2.5161	16 1 42.5	5.887	20	10 16 52.70	2.3498	9 32 34.5	9.860
21	8 22 20.86	2.5136	15 55 46.0	5.996	21	10 19 13.57	2.3459	9 22 41.3	9.912
22	8 24 51.60	2.5110	15 49 43.0	6.104	22	10 21 34.21	2.3421	9 12 45.1	9.962
23	8 27 22.18	2.5083	15 43 33.5	6.212	23	10 23 54.62	2.3382	9 2 45.9	10.011
24	8 29 52.60	2.5056	N.15° 37' 17.5"	6.319	24	10 26 14.79	2.3343	N. 8° 52' 43.8"	10.058

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 29.					SATURDAY 31.				
0	10 26 14.79	2.3343	N. 8 52 43.8	10.088	0	12 14 9.60	2.1717	N. 0 19 45.1	10.847
1	10 28 34.73	2.3304	8 42 38.9	10.104	1	12 16 19.82	2.1691	N. 0 8 54.6	10.886
2	10 30 54.44	2.3266	8 32 31.3	10.149	2	12 18 29.89	2.1664	S. 0 1 55.2	10.923
3	10 33 13.92	2.3230	8 22 21.0	10.193	3	12 20 39.80	2.1638	0 12 44.2	10.960
4	10 35 33.17	2.3190	8 12 8.1	10.235	4	12 22 49.55	2.1613	0 23 32.3	10.794
5	10 37 52.19	2.3151	8 1 52.7	10.276	5	12 24 59.15	2.1588	0 34 19.5	10.778
6	10 40 10.98	2.3113	7 51 35.0	10.316	6	12 27 8.60	2.1563	0 45 5.7	10.761
7	10 42 29.54	2.3075	7 41 15.0	10.353	7	12 29 17.90	2.1538	0 55 50.8	10.743
8	10 44 47.88	2.3037	7 30 52.7	10.390	8	12 31 27.05	2.1514	1 6 34.9	10.724
9	10 47 5.99	2.2999	7 20 28.2	10.426	9	12 33 36.06	2.1490	1 17 17.8	10.705
10	10 49 23.87	2.2962	7 10 1.7	10.460	10	12 35 44.93	2.1466	1 27 59.5	10.685
11	10 51 41.53	2.2925	6 59 33.1	10.493	11	12 37 53.65	2.1443	1 38 40.0	10.663
12	10 53 58.97	2.2888	6 49 2.6	10.524	12	12 40 2.24	2.1420	1 49 19.1	10.641
13	10 56 16.19	2.2851	6 38 30.2	10.554	13	12 42 10.69	2.1398	1 59 56.9	10.618
14	10 58 33.18	2.2814	6 27 56.1	10.583	14	12 44 19.01	2.1376	2 10 33.2	10.594
15	11 0 49.95	2.2777	6 17 20.2	10.612	15	12 46 27.20	2.1354	2 21 8.0	10.568
16	11 3 6.50	2.2740	6 6 42.7	10.639	16	12 48 35.26	2.1332	2 31 41.3	10.541
17	11 5 22.83	2.2701	5 56 3.6	10.664	17	12 50 43.19	2.1311	2 42 13.0	10.514
18	11 7 38.95	2.2663	5 45 23.1	10.688	18	12 52 50.99	2.1291	2 52 43.0	10.486
19	11 9 54.85	2.2625	5 34 41.2	10.710	19	12 54 58.67	2.1270	3 3 11.4	10.458
20	11 12 10.54	2.2588	5 23 57.9	10.731	20	12 57 6.23	2.1250	3 13 38.0	10.429
21	11 14 26.02	2.2552	5 13 13.4	10.753	21	12 59 13.67	2.1230	3 24 2.8	10.398
22	11 16 41.28	2.2517	5 2 27.7	10.771	22	13 1 20.99	2.1211	3 34 25.8	10.367
23	11 18 56.33	2.2482	N. 4 51 40.9	10.788	23	13 3 28.20	2.1193	S. 3 44 46.9	10.335
FRIDAY 30.					SUNDAY, SEPTEMBER 1.				
0	11 21 11.18	2.2466	N. 4 40 53.1	10.804	0	13 5 35.31	2.1174	S. 3 55 6.0	10.302
1	11 23 25.82	2.2434	4 30 4.4	10.819	PHASES OF THE MOON.				
2	11 25 40.26	2.2399	4 19 14.8	10.833					
3	11 27 54.49	2.2365	4 8 24.4	10.847					
4	11 30 8.52	2.2332	3 57 33.2	10.860					
5	11 32 22.35	2.2299	3 46 41.4	10.868	☾ First Quarter, . . . 6 19 8.6 ○ Full Moon, . . . 14 22 37.3 ☾ Last Quarter, . . . 22 9 22.4 ● New Moon, . . . 29 1 4.7				
6	11 34 35.99	2.2266	3 35 49.0	10.877					
7	11 36 49.43	2.2232	3 24 56.1	10.885					
8	11 39 2.67	2.2191	3 14 2.8	10.891					
9	11 41 15.72	2.2159	3 3 9.1	10.897	☾ Apogee, d 18 ☾ Perigee, h 0				
10	11 43 28.58	2.2127	2 52 15.1	10.903					
11	11 45 41.25	2.2096	2 41 20.9	10.905					
12	11 47 53.73	2.2066	2 30 26.5	10.907					
13	11 50 6.03	2.2034	2 19 32.0	10.908					
14	11 52 18.14	2.2003	2 8 37.5	10.908					
15	11 54 30.07	2.1973	1 57 43.0	10.908					
16	11 56 41.82	2.1944	1 46 48.6	10.906					
17	11 58 53.39	2.1914	1 35 54.4	10.903					
18	12 1 4.79	2.1885	1 25 0.4	10.897					
19	12 3 16.02	2.1857	1 14 6.7	10.893					
20	12 5 27.07	2.1828	1 3 13.4	10.885					
21	12 7 37.96	2.1800	0 52 20.5	10.877					
22	12 9 48.67	2.1773	0 41 28.1	10.868					
23	12 11 59.22	2.1744	0 30 36.3	10.858					
24	12 14 9.60	2.1717	N. 0 19 45.1	10.847					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
2	SUN	W.	31° 26' 34"	2663	33° 5' 25"	2618	34° 43' 55"	2625	36° 22' 2"	2682
	Spica	E.	40 54 12	2321	39 8 43	2341	37 23 43	2362	35 39 13	2384
	Saturn	E.	66 27 49	2288	64 41 32	2304	62 55 39	2322	61 10 12	2340
	Antares	E.	86 47 12	2341	85 2 11	2367	83 17 35	2375	81 33 24	2383
3	SUN	W.	44 26 46	2743	46 2 29	2701	47 37 48	2781	49 12 41	2800
	Spica	E.	27 5 3	2610	25 24 4	2641	23 43 48	2676	22 4 19	2612
	Saturn	E.	52 29 22	2430	50 46 30	2449	49 4 5	2467	47 22 6	2487
	Antares	E.	72 59 2	2487	71 17 30	2507	69 36 26	2527	67 55 50	2546
4	SUN	W.	57 0 50	2897	58 33 13	2916	60 5 12	2936	61 36 46	2984
	Saturn	E.	38 58 51	2603	37 19 32	2601	35 40 38	2621	34 2 11	2639
	Antares	E.	59 39 50	2661	58 2 4	2672	56 24 46	2693	54 47 57	2716
	α Aquilæ	E.	107 23 47	3050	105 54 44	3067	104 25 54	3078	102 57 17	3089
5	SUN	W.	69 8 44	3047	70 37 59	3065	72 6 52	3082	73 35 24	3100
	Mars	W.	25 16 51	2920	26 48 45	2938	28 20 16	2964	29 51 26	2972
	Antares	E.	46 51 13	2628	45 17 22	2642	43 44 1	2676	42 11 11	2691
	α Aquilæ	E.	95 38 1	3157	94 11 10	3171	92 44 16	3187	91 17 51	3202
6	SUN	W.	80 52 53	3181	82 19 25	3196	83 45 39	3211	85 11 35	3226
	Mars	W.	37 22 2	3052	38 51 11	3067	40 20 1	3081	41 48 33	3096
	Antares	E.	34 35 20	3043	33 6 0	3076	31 37 20	3109	30 9 21	3146
	α Aquilæ	E.	84 10 29	3284	82 45 59	3302	81 21 50	3319	79 58 1	3337
7	SUN	W.	92 17 10	3221	93 41 32	3263	95 5 40	3314	96 29 35	3326
	Mars	W.	49 7 8	3160	50 34 5	3172	52 0 48	3188	53 27 19	3193
	Spica	W.	25 37 31	3025	27 7 13	3026	28 36 53	3030	30 6 29	3033
	α Aquilæ	E.	73 4 9	3431	71 42 27	3451	70 21 8	3471	69 0 11	3492
	Fomalhaut	E.	105 52 10	3283	104 27 50	3299	103 3 37	3305	101 39 31	3312
	Jupiter	E.	108 13 17	2896	106 40 53	2906	105 8 42	2916	103 36 4	2926
8	SUN	W.	103 26 11	3272	104 48 59	3381	106 11 37	3388	107 34 7	3396
	Mars	W.	60 36 50	3240	62 2 12	3247	63 27 25	3256	64 52 29	3262
	Spica	W.	37 33 17	3055	39 2 22	3059	40 31 22	3064	42 0 16	3068
	α Aquilæ	E.	62 21 25	3604	61 2 55	3630	59 44 53	3646	58 27 19	3663
	Fomalhaut	E.	94 40 54	3344	93 17 33	3360	91 54 19	3366	90 31 12	3368
	Jupiter	E.	95 59 49	2962	94 28 58	2977	92 58 15	2983	91 27 42	2989
9	SUN	W.	114 24 46	3429	115 46 36	3429	117 8 20	3432	118 30 0	3436
	Mars	W.	71 55 59	3269	73 20 23	3294	74 44 41	3298	76 8 56	3300
	Spica	W.	49 23 35	3086	50 52 3	3088	52 20 27	3091	53 48 48	3092
	Saturn	W.	23 20 14	3090	24 48 36	3092	26 16 55	3094	27 45 12	3096
	α Aquilæ	E.	52 7 11	3843	50 52 53	3880	49 39 13	3920	48 26 14	3956
	Fomalhaut	E.	83 37 28	3394	82 15 5	3400	80 52 49	3407	79 30 40	3413
	Jupiter	E.	83 56 42	3015	82 26 48	3019	80 56 59	3023	79 27 15	3026
10	SUN	W.	125 17 33	3446	126 38 57	3446	128 0 21	3447	129 21 44	3447
	Mars	W.	83 9 20	3311	84 33 19	3312	85 57 16	3313	87 21 14	3313
	Spica	W.	61 10 6	3097	62 38 19	3097	64 6 32	3097	65 34 45	3097
	Saturn	W.	35 6 23	3099	36 34 35	3099	38 2 46	3098	39 30 58	3096
	α Aquilæ	E.	42 33 25	4244	41 25 40	4317	40 19 3	4306	39 13 38	4483
	Jupiter	E.	71 59 15	3034	70 29 45	3036	69 0 16	3035	67 30 48	3035
	Fomalhaut	E.	72 41 45	3446	71 20 21	3454	69 59 5	3461	68 37 57	3469
	α Pegasi	E.	87 12 5	3345	85 48 45	3347	84 25 28	3349	83 2 13	3350

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
2	SUN W.	37° 59' 47"	2080	39° 37' 8"	2087	41° 14' 5"	2705	42° 50' 38"	2734
	Spica E.	33 55 15	2407	32 11 50	2431	30 28 59	2465	28 46 43	2481
	Saturn E.	59 25 11	2387	57 40 34	2375	55 56 24	2394	54 12 40	2413
	Antares E.	79 49 39	2411	78 6 20	2430	76 23 27	2448	74 41 1	2467
3	SUN W.	50 47 9	2619	52 21 12	2620	53 54 49	2648	55 28 2	2677
	Spica E.	20 25 40	2655	18 48 0	2704	17 11 26	2753	15 36 10	2838
	Saturn E.	45 40 34	2606	43 59 29	2625	42 18 50	2644	40 38 38	2662
	Antares E.	66 15 41	2667	64 36 1	2668	62 56 49	2668	61 18 5	2620
4	SUN W.	63 7 57	2973	64 38 44	2992	66 9 7	3010	67 39 7	3029
	Saturn E.	32 24 9	2666	30 46 33	2679	29 9 23	2697	27 32 39	2716
	Antares E.	53 11 37	2738	51 35 47	2760	50 0 26	2782	48 25 35	2805
	α Aquilæ E.	101 28 54	3102	100 0 47	3114	98 32 55	3129	97 5 20	3142
5	SUN W.	75 3 34	3116	76 31 24	3133	77 58 53	3149	79 26 3	3166
	Mars W.	31 22 14	2989	32 52 41	3005	34 22 48	3021	35 52 34	3036
	Antares E.	40 38 53	2927	39 7 8	2983	37 35 56	2981	36 5 20	3010
	α Aquilæ E.	89 51 44	3219	88 25 57	3234	87 0 28	3231	85 35 19	3257
6	SUN W.	86 37 14	3240	88 2 36	3253	89 27 43	3266	90 52 34	3279
	Mars W.	43 16 49	3110	44 44 47	3133	46 12 29	3135	47 39 56	3146
	Antares E.	28 42 7	3187	27 15 42	3233	25 50 12	3263	24 25 41	3286
	α Aquilæ E.	78 34 32	3265	77 11 25	3273	75 48 38	3293	74 26 13	3411
7	SUN W.	97 53 17	3336	99 16 47	3345	100 40 6	3355	102 3 14	3365
	Mars W.	54 53 36	3204	56 19 41	3213	57 45 35	3222	59 11 17	3231
	Spica W.	31 36 1	3037	33 5 28	3041	34 34 50	3046	36 4 6	3050
	α Aquilæ E.	67 39 38	3513	66 19 28	3536	64 59 42	3567	63 40 21	3580
	Fomalhaut E.	100 15 33	3318	98 51 42	3325	97 27 59	3331	96 4 23	3337
	Jupiter E.	102 4 58	2935	100 33 24	2945	99 2 2	2963	97 30 50	2962
8	SUN W.	108 56 29	3402	110 18 43	3409	111 40 50	3414	113 2 51	3419
	Mars W.	66 17 25	3268	67 42 14	3274	69 6 55	3280	70 31 30	3285
	Spica W.	43 29 5	3072	44 57 49	3076	46 26 28	3079	47 55 3	3082
	α Aquilæ E.	57 10 14	3711	55 53 39	3742	54 37 36	3773	53 22 6	3807
	Fomalhaut E.	89 8 13	3369	87 45 21	3375	86 22 36	3381	84 59 58	3386
	Jupiter E.	89 57 16	2995	88 26 58	3001	86 56 46	3006	85 26 41	3011
9	SUN W.	119 51 36	3435	121 13 9	3441	122 34 39	3443	123 56 7	3445
	Mars W.	77 33 6	3304	78 57 13	3306	80 21 18	3308	81 45 20	3310
	Spica W.	55 17 7	3084	56 45 24	3086	58 13 39	3086	59 41 53	3097
	Saturn W.	29 13 28	3093	30 41 43	3096	32 9 57	3097	33 38 10	3097
	α Aquilæ E.	47 14 0	4012	46 2 32	4064	44 51 55	4118	43 42 11	4179
	Fomalhaut E.	78 8 38	3419	76 46 43	3436	75 24 56	3433	74 3 17	3430
	Jupiter E.	77 57 33	3020	76 27 55	3030	74 58 20	3032	73 28 46	3034
10	SUN W.	130 43 7	3447	132 4 30	3445	133 25 54	3446	134 47 19	3444
	Mars W.	88 45 11	3312	90 9 9	3311	91 33 8	3310	92 57 7	3309
	Spica W.	67 2 58	3095	68 31 12	3095	69 59 28	3094	71 27 45	3091
	Saturn W.	40 59 12	3095	42 27 26	3095	43 55 42	3093	45 24 0	3092
	α Aquilæ E.	38 9 31	4280	37 6 49	4299	36 5 39	4308	35 6 9	4315
	Jupiter E.	66 1 19	3035	64 31 50	3034	63 2 20	3034	61 32 49	3032
	Fomalhaut E.	67 16 58	3477	65 56 8	3486	64 35 28	3495	63 14 58	3505
	α Pegasi E.	81 38 59	3351	80 15 47	3354	78 52 38	3355	77 29 30	3357

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
11	Mars W.	94° 21' 9"	3306	95° 45' 12"	3305	97° 9' 18"	3302	98° 33' 27"	3299
	Spica W.	72 56 5	3090	74 24 27	3087	75 52 52	3085	77 21 20	3082
	Saturn W.	46 52 19	3080	48 20 41	3087	49 49 6	3084	51 17 35	3082
	Antares W.	28 20 38	3350	29 43 52	3335	31 7 34	3292	32 31 43	3261
	Jupiter E.	60 3 16	3080	58 33 41	3029	57 4 4	3026	55 34 24	3024
	Fomalhaut E.	61 54 39	3515	60 34 31	3526	59 14 36	3538	57 54 54	3540
	α Pegasi E.	76 6 24	3365	74 43 20	3361	73 20 19	3363	71 57 20	3365
12	Mars W.	105 35 8	3261	106 59 42	3276	108 24 20	3272	109 49 5	3267
	Spica W.	84 44 43	3063	86 13 38	3069	87 42 38	3064	89 11 44	3060
	Saturn W.	58 40 56	3063	60 9 51	3060	61 38 50	3064	63 7 56	3049
	Antares W.	39 38 2	3198	41 4 13	3185	42 30 40	3173	43 57 21	3161
	Jupiter E.	48 5 8	3007	46 35 3	3003	45 4 54	2998	43 34 40	2994
	Fomalhaut E.	51 20 18	3535	50 2 21	3537	48 44 48	3581	47 27 41	3577
	α Pegasi E.	65 3 13	3361	63 40 35	3356	62 18 3	3362	60 55 37	3367
13	α Arietis E.	108 5 12	3190	106 38 51	3183	105 12 22	3177	103 45 45	3171
	Spica W.	96 38 44	3023	98 8 28	3017	99 38 20	3011	101 8 19	3005
	Saturn W.	70 34 59	3022	72 4 45	3016	73 34 38	3010	75 4 38	3004
	Antares W.	51 14 14	3107	52 42 15	3097	54 10 28	3087	55 38 53	3078
	Jupiter E.	36 2 1	2970	34 31 11	2965	33 0 15	2960	31 29 12	2955
	Fomalhaut E.	41 10 13	3595	39 56 48	3546	38 44 15	4006	37 32 41	4072
	α Pegasi E.	54 5 21	3485	52 43 48	3481	51 22 29	3463	50 1 24	3478
14	α Arietis E.	96 30 43	3135	95 3 19	3130	93 35 46	3134	92 8 6	3118
	Saturn W.	82 36 40	2970	84 7 30	2963	85 38 29	2956	87 9 37	2948
	Antares W.	63 3 53	3081	64 33 27	3023	66 3 12	3014	67 33 8	3004
	α Pegasi E.	43 20 50	3589	42 2 4	3523	40 43 55	3561	39 26 26	3700
	α Arietis E.	84 47 46	3086	83 19 19	3079	81 50 44	3073	80 22 2	3067
	Saturn W.	94 47 38	2911	96 19 43	2904	97 51 57	2896	99 24 21	2888
	Antares W.	75 5 35	2961	76 36 37	2952	78 7 50	2943	79 39 14	2935
15	α Arietis E.	72 56 41	3089	71 27 16	3034	69 57 45	3029	68 28 8	3025
	Aldebaran E.	105 15 20	2893	103 42 52	2886	102 10 15	2878	100 37 28	2869
	Antares W.	87 18 56	2993	88 51 24	2984	90 24 3	2976	91 56 52	2968
	α Aquilæ W.	44 0 27	3559	45 14 28	3795	46 29 35	3786	47 45 42	3685
	α Arietis E.	60 58 47	3006	59 28 42	3004	57 58 34	3002	56 28 24	3001
	Aldebaran E.	92 50 55	2929	91 17 5	2921	89 43 5	2913	88 8 54	2906
	Antares W.	99 43 33	2926	101 17 24	2921	102 51 25	2913	104 25 36	2905
16	α Aquilæ W.	54 19 18	3489	55 40 17	3484	57 1 55	3401	58 24 10	3371
	α Arietis E.	48 57 27	3006	47 27 22	3010	45 57 22	3016	44 27 29	3024
	Aldebaran E.	80 15 16	2763	78 39 59	2754	77 4 31	2746	75 28 52	2738
	α Aquilæ W.	65 23 36	3241	66 48 57	3219	68 14 44	3196	69 40 55	3178
	Fomalhaut W.	33 58 52	3565	35 11 15	3561	36 25 25	3756	37 41 13	3670
	Jupiter W.	26 50 44	2686	28 28 9	2656	30 5 48	2646	31 43 41	2636
	α Arietis E.	37 1 14	3095	35 32 58	3119	34 5 12	3148	32 38 1	3183
17	Aldebaran E.	67 27 45	2694	65 50 57	2685	64 13 57	2676	62 36 45	2663
	Pollux E.	110 58 16	2763	109 23 26	2772	107 48 22	2762	106 13 4	2752
	α Aquilæ W.	76 57 25	3093	78 25 43	3078	79 54 20	3066	81 23 13	3051
	Fomalhaut W.	44 20 41	3347	45 43 58	3299	47 8 11	3254	48 33 16	3212
	Jupiter W.	39 56 23	2686	41 35 36	2677	43 15 2	2668	44 54 41	2659
	α Aquilæ W.	76 57 25	3093	78 25 43	3078	79 54 20	3066	81 23 13	3051
	Fomalhaut W.	44 20 41	3347	45 43 58	3299	47 8 11	3254	48 33 16	3212
	Jupiter W.	39 56 23	2686	41 35 36	2677	43 15 2	2668	44 54 41	2659

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
11	Mars W.	99 57 40	3296	101 21 55	3293	102 46 15	3290	104 10 39	3286
	Spica W.	78 49 52	3078	80 18 28	3075	81 47 8	3071	83 15 53	3067
	Saturn W.	52 46 6	3076	54 14 42	3075	55 43 22	3072	57 12 6	3067
	Antares W.	33 56 17	3261	35 21 14	3243	36 46 32	3228	38 12 8	3213
	Jupiter E.	54 4 40	3021	52 34 53	3018	51 5 2	3014	49 35 7	3011
	Fomalhaut E.	56 35 25	3264	55 16 11	3260	53 57 15	3257	52 38 37	3214
	α Pegasi E.	70 34 24	3368	69 11 31	3371	67 48 41	3374	66 25 55	3378
12	Mars W.	111 13 55	3262	112 38 51	3257	113 3 53	3261	115 29 2	3246
	Spica W.	90 40 55	3045	92 10 12	3039	93 39 36	3034	95 9 7	3029
	Saturn W.	61 37 8	3044	66 6 26	3039	67 35 50	3034	69 5 21	3028
	Antares W.	45 24 17	3149	46 51 27	3138	48 18 50	3128	49 46 26	3118
	Jupiter E.	42 4 20	2989	40 33 54	2986	39 3 22	2980	37 32 45	2976
	Fomalhaut E.	46 11 1	3137	44 54 53	3170	43 39 20	3007	42 24 25	3049
	α Pegasi E.	59 33 17	3403	58 11 4	3411	56 49 0	3420	55 27 6	3428
	α Arietis E.	102 19 1	3164	100 52 9	3157	99 25 8	3160	97 57 59	3144
13	Spica W.	102 38 26	2996	104 8 41	2993	105 39 3	2986	107 9 33	2979
	Saturn W.	76 34 46	2997	78 5 2	2991	79 35 26	2985	81 5 58	2977
	Antares W.	57 7 30	3068	58 36 19	3069	60 5 19	3060	61 34 30	3040
	Jupiter E.	29 58 2	2950	28 26 46	2944	26 55 24	2939	25 23 54	2934
	Fomalhaut E.	36 22 12	4137	35 12 56	4232	34 5 0	4329	32 58 34	4439
	α Pegasi E.	48 40 35	3494	47 20 4	3513	45 59 54	3535	44 40 8	3600
	α Arietis E.	90 40 18	3111	89 12 22	3105	87 44 18	3096	86 16 6	3091
14	Saturn W.	88 40 55	2943	90 12 21	2934	91 43 57	2926	93 15 43	2919
	Antares W.	69 3 16	2995	70 33 35	2987	72 4 4	2978	73 34 44	2969
	α Pegasi E.	38 9 39	3746	36 53 40	3739	35 38 37	3680	34 24 37	3630
	α Arietis E.	78 53 12	3061	77 24 15	3056	75 55 11	3060	74 26 0	3043
15	Saturn W.	100 56 55	2890	102 29 40	2873	104 2 35	2865	105 35 39	2856
	Antares W.	81 10 49	2926	82 42 35	2918	84 14 31	2909	85 46 38	2901
	α Arietis E.	66 58 27	3021	65 28 40	3016	63 58 47	3012	62 28 49	3009
	Aldebaran E.	99 4 30	2963	97 31 22	2963	95 58 3	2945	94 24 34	2936
16	Antares W.	93 29 52	2890	95 3 2	2893	96 36 22	2845	98 9 52	2886
	α Aquilæ W.	49 2 45	3636	50 20 42	3689	51 39 28	3646	52 59 1	3606
	α Arietis E.	54 58 12	3000	53 27 59	3001	51 57 47	3001	50 27 36	3003
	Aldebaran E.	86 34 33	2797	85 0 1	2796	83 25 17	2779	81 50 22	2771
17	Antares W.	105 59 57	2796	107 34 28	2791	109 9 8	2783	110 43 58	2776
	α Aquilæ W.	59 47 0	3342	61 10 23	3314	62 34 18	3298	63 58 43	3286
	α Arietis E.	42 57 46	3033	41 28 14	3048	39 58 55	3038	38 29 54	3076

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LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
19	α Pegasi W.	30° 39' 17"	2866	31° 53' 19"	2789	33° 9' 25"	2634	34° 27' 23"	2541
	Aldebaran E.	54 27 45	2622	52 49 20	2613	51 10 42	2603	49 31 51	2594
	Pollux E.	98 13 14	2701	96 36 36	2692	94 59 46	2682	93 22 42	2673
	Sun E.	132 32 7	2955	131 0 58	2946	129 29 37	2935	127 58 3	2925
	•								
20	α Aquilæ W.	88 51 32	2994	90 21 52	2984	91 52 25	2975	93 23 9	2967
	Fomalhaut W.	55 50 6	2648	57 19 26	2614	58 49 21	2608	60 19 49	2603
	Jupiter W.	53 16 15	2510	54 57 15	2500	56 38 28	2490	58 19 55	2480
	α Pegasi W.	41 19 41	2903	42 45 47	2893	44 12 53	2886	45 40 55	2880
	Aldebaran E.	41 14 26	2647	39 34 18	2637	37 53 56	2627	36 13 21	2617
	Pollux E.	85 14 13	2626	83 35 53	2618	81 57 21	2607	80 18 36	2599
	Sun E.	120 16 56	2873	118 44 3	2862	117 10 56	2852	115 37 35	2842
21	α Aquilæ W.	100 59 6	2936	102 30 39	2932	104 2 17	2930	105 33 58	2927
	Fomalhaut W.	67 59 28	2656	69 32 43	2638	71 6 22	2630	72 40 24	2623
	Jupiter W.	66 50 39	2431	68 33 30	2420	70 16 36	2410	71 59 56	2401
	α Pegasi W.	53 12 51	2894	54 45 17	2886	56 18 17	2882	57 51 51	2877
	Aldebaran E.	27 46 58	2467	26 4 59	2466	24 22 47	2448	22 40 21	2438
	Pollux E.	72 1 52	2866	70 21 56	2848	68 41 49	2840	67 1 31	2832
	Sun E.	107 47 25	2786	106 12 41	2777	104 37 43	2766	103 2 30	2756
22	Jupiter W.	80 40 13	2330	82 25 0	2329	84 10 1	2330	85 55 17	2320
	Fomalhaut W.	80 35 51	2739	82 11 53	2715	83 48 13	2703	85 24 49	2692
	α Pegasi W.	65 47 11	2711	67 23 36	2693	69 0 25	2676	70 37 37	2669
	α Arietis W.	23 18 44	2347	24 42 1	2317	26 7 50	2308	27 35 50	2307
	Pollux E.	58 37 26	2499	56 56 10	2492	55 14 45	2487	53 33 13	2483
	Sun E.	95 2 50	2701	93 26 11	2689	91 49 17	2678	90 12 8	2668
	•								
23	Jupiter W.	94 45 15	2370	96 31 58	2363	98 18 54	2351	100 6 5	2343
	Fomalhaut W.	93 31 26	2643	95 9 24	2635	96 47 32	2627	98 25 50	2621
	α Pegasi W.	78 48 57	2687	80 28 10	2674	82 7 41	2662	83 47 28	2651
	α Arietis W.	35 19 48	2712	36 56 12	2670	38 33 32	2662	40 11 44	2659
	Pollux E.	45 4 20	2473	43 22 27	2474	41 40 37	2477	39 58 51	2482
	Sun E.	82 2 47	2614	80 24 11	2604	78 45 22	2594	77 6 19	2584
	•								
24	Jupiter W.	109 5 20	2199	110 53 50	2190	112 42 32	2183	114 31 26	2176
	Fomalhaut W.	106 39 3	2698	108 17 54	2691	109 56 46	2683	111 35 37	2675
	α Pegasi W.	92 9 59	2604	93 51 6	2497	95 32 23	2491	97 13 49	2486
	α Arietis W.	48 32 57	2469	50 14 54	2449	51 57 19	2439	53 40 11	2412
	Sun E.	68 47 39	2636	67 7 16	2627	65 26 40	2618	63 45 52	2610
	•								
	•								
25	α Pegasi W.	105 42 34	2470	107 24 30	2470	109 6 25	2472	110 48 18	2473
	α Arietis W.	62 20 18	2343	64 5 17	2331	65 50 32	2321	67 36 1	2311
	Aldebaran W.	28 32 56	2174	30 22 2	2169	32 11 17	2163	34 0 40	2166
	Sun E.	55 19 6	2473	53 37 14	2466	51 55 13	2460	50 13 4	2456
	•								
26	α Pegasi W.	119 16 19	2607	120 57 23	2618	122 38 11	2633	124 18 39	2648
	α Arietis W.	76 26 29	2377	78 13 3	2375	79 59 43	2368	81 46 29	2366
	Aldebaran W.	43 9 23	2138	44 59 24	2135	46 49 30	2133	48 39 39	2131
	Sun E.	41 40 31	2483	39 57 44	2481	38 14 53	2479	36 31 59	2476
	•								
31	Sun W.	25 35 41	2750	27 11 14	2768	28 46 24	2785	30 21 11	2803
	Saturn E.	45 35 23	2462	43 53 16	2479	42 11 33	2484	40 30 12	2493
	Antares E.	65 2 36	2511	63 21 38	2530	61 41 6	2548	60 1 0	2567
	α Aquilæ E.	112 13 44	2966	110 42 38	2962	109 11 37	2967	107 40 43	2973

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
19	<i>α</i> Pegasi W.	35° 47' 2"	2456	37° 8' 13"	2394	38° 30' 48"	2317	39° 54' 40"	2266
	Aldebaran E.	47 52 48	2665	46 13 32	2676	44 34 3	2666	42 54 21	2666
	Pollux E.	91 45 26	2663	90 7 57	2654	88 30 15	2644	86 52 20	2635
	SUN E.	126 26 16	2916	124 54 16	2904	123 22 2	2894	121 49 36	2883
20	<i>α</i> Aquilæ W.	94 54 3	2969	96 25 7	2963	97 56 19	2946	99 27 39	2941
	Fomalhaut W.	61 50 48	2939	63 22 17	2917	64 54 14	2896	66 26 38	2876
	Jupiter W.	60 1 35	2470	61 43 30	2480	63 25 39	2480	65 8 2	2441
	<i>α</i> Pegasi W.	47 9 48	2926	48 39 29	2969	50 9 55	2966	51 41 3	2994
	Aldebaran E.	34 32 32	2607	32 51 29	2496	31 10 13	2498	29 28 43	2477
	Pollux E.	78 39 39	2690	77 0 30	2681	75 21 9	2672	73 41 36	2664
	SUN E.	114 4 1	2631	112 30 13	2620	110 56 11	2609	109 21 55	2598
21	<i>α</i> Aquilæ W.	107 5 42	2927	108 37 27	2927	110 9 12	2928	111 40 55	2961
	Fomalhaut W.	74 14 49	2789	75 49 35	2771	77 24 41	2766	79 0 7	2742
	Jupiter W.	73 43 30	2390	75 27 19	2380	77 11 22	2370	78 55 40	2360
	<i>α</i> Pegasi W.	59 25 57	2794	61 0 33	2771	62 35 39	2760	64 11 12	2731
	Aldebaran E.	20 57 40	2428	19 14 45	2417	17 31 35	2408	15 48 11	2398
	Pollux E.	65 21 2	2625	63 40 23	2617	61 59 23	2610	60 18 34	2604
	SUN E.	101 27 3	2744	99 51 21	2733	98 15 25	2723	96 39 15	2711
22	Jupiter W.	87 40 48	2310	89 26 33	2300	91 12 33	2290	92 58 47	2280
	Fomalhaut W.	87 1 40	2681	88 38 46	2670	90 16 6	2660	91 53 39	2650
	<i>α</i> Pegasi W.	72 15 12	2643	73 53 8	2628	75 31 25	2613	77 10 2	2606
	<i>α</i> Arietis W.	29 5 42	2938	30 37 13	2939	32 10 11	2910	33 44 26	2769
	Pollux E.	51 51 35	2479	50 9 52	2476	48 28 4	2473	46 46 13	2472
	SUN E.	88 34 45	2637	86 57 7	2646	85 19 15	2635	83 41 8	2625
23	Jupiter W.	101 53 29	2333	103 41 7	2325	105 28 59	2316	107 17 3	2307
	Fomalhaut W.	100 4 16	2616	101 42 49	2611	103 21 29	2607	105 0 14	2604
	<i>α</i> Pegasi W.	85 27 31	2640	87 7 48	2630	88 48 19	2621	90 29 3	2612
	<i>α</i> Arietis W.	41 50 41	2698	43 30 20	2640	45 10 38	2616	46 51 31	2491
	Pollux E.	38 17 12	2469	36 35 43	2499	34 54 28	2612	33 13 32	2620
	SUN E.	75 27 2	2674	73 47 31	2664	72 7 47	2654	70 27 49	2646
24	Jupiter W.	116 20 32	2167	118 9 48	2160	119 59 15	2154	121 48 53	2147
	Fomalhaut W.	113 14 25	2608	114 53 9	2613	116 31 46	2619	118 10 15	2627
	<i>α</i> Pegasi W.	98 55 23	2480	100 37 4	2477	102 18 50	2474	104 0 40	2471
	<i>α</i> Arietis W.	55 23 29	2396	57 7 10	2380	58 51 13	2366	60 35 36	2363
	SUN E.	62 4 53	2602	60 23 42	2494	58 42 20	2487	57 0 48	2480
25	<i>α</i> Pegasi W.	112 30 9	2477	114 11 54	2462	115 53 32	2469	117 35 1	2497
	<i>α</i> Arietis W.	69 21 44	2303	71 7 39	2296	72 53 46	2288	74 40 3	2282
	Aldebaran W.	35 50 11	2153	37 39 49	2148	39 29 35	2144	41 19 27	2141
	SUN E.	48 30 47	2449	46 48 22	2445	45 5 51	2441	43 23 14	2436
26	<i>α</i> Pegasi W.	125 58 45	2667	127 38 25	2669	129 17 35	2614	130 56 11	2642
	<i>α</i> Arietis W.	83 33 19	2264	85 20 12	2262	87 7 8	2262	88 54 4	2263
	Aldebaran W.	50 29 51	2130	52 20 5	2130	54 10 19	2129	56 0 34	2130
	SUN E.	34 49 2	2425	33 6 3	2425	31 23 4	2425	29 40 5	2425
31	SUN W.	31 55 36	2620	33 29 38	2637	35 3 18	2656	36 36 35	2673
	Saturn E.	38 49 16	2630	37 8 44	2648	35 28 37	2656	33 48 54	2684
	Antares E.	58 21 20	2667	56 42 7	2667	55 3 21	2637	53 25 3	2649
	<i>α</i> Aquilæ E.	106 9 57	2961	104 39 21	2991	103 8 57	3001	101 38 45	3011

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.			
Sun.	1	^h 10 ^m 40 ^s 41.72	9.080	N. 8° 22' 16.2"	54.41	15' 53.65"	64.43	0 1.61	0.776
Mon.	2	10 44 19.45	9.067	8 0 26.7	54.74	15 53.88	64.38	0 20.38	0.789
Tues.	3	10 47 56.88	9.055	7 38 29.5	55.05	15 54.12	64.34	0 39.44	0.801
Wed.	4	10 51 34.03	9.044	7 16 24.9	55.35	15 54.36	64.30	0 58.79	0.812
Thur.	5	10 55 10.92	9.033	6 54 13.3	55.64	15 54.61	64.27	1 18.40	0.823
Fri.	6	10 58 47.56	9.023	6 31 55.0	55.91	15 54.86	64.23	1 38.26	0.833
Sat.	7	11 2 23.96	9.014	6 9 30.4	56.17	15 55.11	64.20	1 58.35	0.842
Sun.	8	11 6 0.15	9.005	5 46 59.7	56.42	15 55.36	64.17	2 18.66	0.850
Mon.	9	11 9 36.14	8.998	5 24 23.2	56.65	15 55.61	64.15	2 39.17	0.858
Tues.	10	11 13 11.97	8.992	5 1 41.4	56.87	15 55.86	64.13	2 59.83	0.864
Wed.	11	11 16 47.66	8.986	4 38 54.5	57.07	15 56.12	64.11	3 20.64	0.870
Thur.	12	11 20 23.21	8.981	4 16 2.7	57.26	15 56.38	64.09	3 41.58	0.875
Fri.	13	11 23 58.65	8.977	3 53 6.3	57.44	15 56.64	64.08	4 2.64	0.879
Sat.	14	11 27 34.01	8.974	3 30 5.9	57.61	15 56.89	64.07	4 23.78	0.882
Sun.	15	11 31 9.32	8.972	3 7 1.9	57.76	15 57.15	64.06	4 44.96	0.884
Mon.	16	11 34 44.59	8.971	2 43 54.3	57.90	15 57.41	64.06	5 6.18	0.885
Tues.	17	11 38 19.84	8.971	2 20 43.3	58.03	15 57.67	64.06	5 27.42	0.885
Wed.	18	11 41 55.11	8.972	1 57 29.4	58.14	15 57.93	64.06	5 48.64	0.883
Thur.	19	11 45 30.43	8.974	1 34 13.1	58.24	15 58.19	64.06	6 9.82	0.881
Fri.	20	11 49 5.81	8.977	1 10 54.6	58.33	15 58.45	64.07	6 30.94	0.878
Sat.	21	11 52 41.25	8.981	0 47 34.0	58.40	15 58.71	64.08	6 51.99	0.875
Sun.	22	11 56 16.79	8.986	0 24 11.9	58.46	15 58.97	64.09	7 12.94	0.870
Mon.	23	11 59 52.44	8.991	N. 0 0 48.6	58.50	15 59.24	64.11	7 33.78	0.865
Tues.	24	12 3 28.24	8.997	S. 0 22 35.6	58.53	15 59.50	64.13	7 54.49	0.859
Wed.	25	12 7 4.20	9.004	0 46 0.4	58.55	15 59.77	64.15	8 15.03	0.852
Thur.	26	12 10 40.33	9.012	1 9 25.2	58.55	16 0.04	64.17	8 35.39	0.844
Fri.	27	12 14 16.66	9.020	1 32 49.9	58.53	16 0.31	64.20	8 55.56	0.836
Sat.	28	12 17 53.19	9.029	1 56 14.2	58.50	16 0.58	64.23	9 15.52	0.827
Sun.	29	12 21 29.94	9.039	2 19 37.6	58.46	16 0.86	64.27	9 35.27	0.818
Mon.	30	12 25 6.93	9.049	2 42 59.6	58.40	16 1.14	64.31	9 54.79	0.808
Tues.	31	12 28 44.17	9.060	S. 3 6 19.9	58.32	16 1.42	64.35	10 14.04	0.797

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Sun.	1	^h 10 ^m 40 ^s 41.72	9.080	N. 8° 22' 16.2"	54.41	^m 0 ^s 1.61	0.776	^h 10 ^m 40 ^s 43.33
Mon.	2	10 44 19.50	9.067	8 0 26.4	54.74	0 20.38	0.789	10 44 39.88
Tues.	3	10 47 56.98	9.055	7 38 28.9	55.05	0 39.45	0.801	10 48 36.43
Wed.	4	10 51 34.18	9.044	7 16 24.0	55.35	0 58.81	0.812	10 52 32.99
Thur.	5	10 55 11.12	9.033	6 54 12.1	55.64	1 18.42	0.823	10 56 29.54
Fri.	6	10 58 47.81	9.023	6 31 53.5	55.91	1 38.28	0.833	11 0 26.09
Sat.	7	11 2 24.26	9.014	6 9 28.6	56.17	1 58.38	0.842	11 4 22.64
Sun.	8	11 6 0.50	9.005	5 46 57.5	56.42	2 18.70	0.850	11 8 19.20
Mon.	9	11 9 36.54	8.998	5 24 20.7	56.65	2 39.21	0.858	11 12 15.75
Tues.	10	11 13 12.42	8.992	5 1 38.5	56.87	2 59.88	0.864	11 16 12.30
Wed.	11	11 16 48.16	8.986	4 38 51.3	57.07	3 20.69	0.870	11 20 8.85
Thur.	12	11 20 23.76	8.981	4 15 59.2	57.26	3 41.64	0.875	11 24 5.40
Fri.	13	11 23 59.25	8.977	3 53 2.5	57.44	4 2.70	0.879	11 28 1.95
Sat.	14	11 27 34.67	8.974	3 30 1.7	57.61	4 23.84	0.882	11 31 58.51
Sun.	15	11 31 10.03	8.972	3 6 57.3	57.76	4 45.03	0.884	11 35 55.06
Mon.	16	11 34 45.35	8.971	2 43 49.3	57.90	5 6.26	0.885	11 39 51.61
Tues.	17	11 38 20.66	8.971	2 20 38.0	58.03	5 27.50	0.885	11 43 48.16
Wed.	18	11 41 55.99	8.972	1 57 23.8	58.14	5 48.73	0.883	11 47 44.72
Thur.	19	11 45 31.36	8.974	1 34 7.1	58.24	6 9.91	0.881	11 51 41.27
Fri.	20	11 49 6.78	8.977	1 10 48.2	58.33	6 31.04	0.878	11 55 37.82
Sat.	21	11 52 42.28	8.981	0 47 27.3	58.40	6 52.09	0.875	11 59 34.37
Sun.	22	11 56 17.87	8.986	0 24 4.9	58.46	7 13.05	0.870	12 3 30.92
Mon.	23	11 59 53.58	8.991	N. 0 0 41.3	58.50	7 33.89	0.865	12 7 27.47
Tues.	24	12 3 29.43	8.997	S. 0 22 43.3	58.53	7 54.60	0.859	12 11 24.03
Wed.	25	12 7 5.44	9.004	0 46 8.4	58.55	8 15.14	0.852	12 15 20.58
Thur.	26	12 10 41.62	9.012	1 9 33.6	58.55	8 35.51	0.844	12 19 17.13
Fri.	27	12 14 18.00	9.020	1 32 58.7	58.53	8 55.68	0.836	12 23 13.68
Sat.	28	12 17 54.58	9.029	1 56 23.2	58.50	9 15.65	0.827	12 27 10.23
Sun.	29	12 21 31.38	9.039	2 19 46.9	58.46	9 35.40	0.818	12 31 6.78
Mon.	30	12 25 8.42	9.049	2 43 9.2	58.40	9 54.92	0.808	12 35 3.34
Tues.	31	12 28 45.72	9.060	S. 3 6 29.8	58.32	10 14.17	0.797	12 38 59.89

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

THE SUN'S									
Day of the Month.	Day of the Year.	True LONGITUDE.				LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
				Diff. for 1 hour.					
		λ	λ'						
1	244	158° 33' 0.8	32 31.1	145.31	+0.25	0.0037873	44.3	13 17 5.73	
2	245	159 31 9.4	30 39.6	145.38	0.36	.0036800	45.0	13 13 9.82	
3	246	160 29 19.4	28 49.5	145.45	0.45	.0035713	45.6	13 9 13.92	
4	247	161 27 31.0	27 1.0	145.52	0.50	.0034610	46.2	13 5 18.01	
5	248	162 25 44.0	25 13.9	145.58	0.53	.0033493	46.7	13 1 22.10	
6	249	163 23 58.5	23 28.3	145.64	0.53	.0032365	47.1	12 57 26.20	
7	250	164 22 14.5	21 44.3	145.70	0.50	.0031228	47.5	12 53 30.29	
8	251	165 20 32.0	20 1.7	145.76	0.45	.0030083	47.8	12 49 34.39	
9	252	166 18 51.1	18 20.7	145.83	0.37	.0028932	48.0	12 45 38.49	
10	253	167 17 11.8	16 41.3	145.89	0.27	.0027776	48.2	12 41 42.58	
11	254	168 15 34.2	15 3.6	145.96	0.15	.0026616	48.4	12 37 46.67	
12	255	169 13 58.4	13 27.8	146.03	+0.02	.0025452	48.5	12 33 50.77	
13	256	170 12 24.4	11 53.7	146.11	-0.12	.0024285	48.6	12 29 54.86	
14	257	171 10 52.2	10 21.4	146.19	0.25	.0023117	48.7	12 25 58.95	
15	258	172 9 21.9	8 51.0	146.28	0.38	.0021947	48.8	12 22 3.05	
16	259	173 7 53.6	7 22.6	146.36	0.49	.0020776	48.9	12 18 7.14	
17	260	174 6 27.3	5 56.3	146.45	0.57	.0019604	48.9	12 14 11.23	
18	261	175 5 3.0	4 31.9	146.54	0.62	.0018430	49.0	12 10 15.33	
19	262	176 3 40.9	3 9.7	146.63	0.65	.0017252	49.1	12 6 19.42	
20	263	177 2 21.1	1 49.8	146.72	0.65	.0016071	49.2	12 2 23.51	
21	264	178 1 3.5	0 32.1	146.81	0.63	.0014886	49.4	11 58 27.61	
22	265	178 59 48.2	59 16.8	146.91	0.58	.0013696	49.7	11 54 31.70	
23	266	179 58 35.2	58 3.7	147.01	0.49	.0012499	50.0	11 50 35.79	
24	267	180 57 24.5	56 52.9	147.11	0.37	.0011294	50.3	11 46 39.89	
25	268	181 56 16.1	55 44.4	147.20	0.25	.0010081	50.7	11 42 43.99	
26	269	182 55 9.9	54 38.1	147.29	-0.12	.0008860	51.0	11 38 48.08	
27	270	183 54 5.7	53 33.9	147.37	+0.01	.0007630	51.4	11 34 52.17	
28	271	184 53 3.5	52 31.6	147.46	0.13	.0006391	51.8	11 30 56.27	
29	272	185 52 3.3	51 31.3	147.54	0.24	.0005143	52.2	11 27 0.36	
30	273	186 51 5.2	50 33.1	147.62	0.33	.0003887	52.5	11 23 4.46	
31	274	187 50 9.0	49 36.8	147.70	+0.41	0.0002624	52.8	11 19 8.55	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	15 40.1	15 33.3	57 23.5	-2.07	56 58.7	-2.04	^h 2 ^m 29.7	^m 2.01	^d 3.0
2	15 26.7	15 20.4	56 34.5	1.98	56 11.3	1.88	3 17.6	1.98	4.0
3	15 14.5	15 9.0	55 49.4	1.75	55 29.3	1.59	4 4.9	1.96	5.0
4	15 4.0	14 59.7	55 11.2	1.42	54 55.3	1.23	4 51.9	1.96	6.0
5	14 56.0	14 53.0	54 41.8	1.03	54 30.7	0.81	5 39.0	1.97	7.0
6	14 50.7	14 49.1	54 22.2	0.60	54 16.2	-0.39	6 26.3	1.97	8.0
7	14 48.1	14 47.9	54 12.8	-0.18	54 11.9	+0.03	7 13.7	1.98	9.0
8	14 48.3	14 49.4	54 13.5	+0.23	54 17.4	0.41	8 1.2	1.97	10.0
9	14 51.0	14 54.2	54 23.4	0.59	54 31.4	0.75	8 48.5	1.97	11.0
10	14 55.9	14 59.0	54 41.3	0.89	54 52.8	1.02	9 35.5	1.95	12.0
11	15 2.6	15 6.4	55 5.7	1.12	55 19.7	1.21	10 22.2	1.94	13.0
12	15 10.5	15 14.7	55 34.6	1.27	55 50.2	1.31	11 9.8	1.94	14.0
13	15 19.0	15 23.4	56 6.2	1.34	56 22.3	1.34	11 55.5	1.95	15.0
14	15 27.8	15 32.0	56 38.4	1.33	56 54.3	1.31	12 42.7	1.98	16.0
15	15 36.3	15 40.4	57 9.7	1.27	57 24.7	1.21	13 30.8	2.03	17.0
16	15 44.3	15 48.0	57 39.0	1.16	57 52.6	1.10	14 20.3	2.10	18.0
17	15 51.5	15 54.8	58 5.4	1.04	58 17.4	0.97	15 11.8	2.19	19.0
18	15 57.8	16 0.6	58 28.6	0.90	58 38.9	0.83	16 5.4	2.28	20.0
19	16 3.2	16 5.5	58 48.4	0.75	58 57.0	0.68	17 1.2	2.36	21.0
20	16 7.6	16 9.4	59 4.7	0.60	59 11.3	0.51	17 58.6	2.41	22.0
21	16 11.0	16 12.2	59 16.9	0.42	59 21.4	0.31	18 56.6	2.42	23.0
22	16 13.0	16 13.4	59 24.4	+0.20	59 26.1	+0.07	19 54.4	2.39	24.0
23	16 13.4	16 13.0	59 26.1	-0.07	59 24.4	-0.22	20 50.9	2.32	25.0
24	16 12.0	16 10.4	59 20.7	0.39	59 15.0	0.56	21 45.6	2.24	26.0
25	16 8.3	16 5.6	59 7.2	0.74	58 57.3	0.91	22 38.3	2.16	27.0
26	16 2.3	15 58.5	58 45.3	1.08	58 31.3	1.24	23 29.3	2.09	28.0
27	15 54.2	15 49.5	58 15.6	1.33	57 58.2	1.50	6		29.0
28	15 44.5	15 39.1	57 39.6	1.59	57 19.9	1.66	0 18.8	2.04	0.5
29	15 33.6	15 28.0	56 59.7	1.70	56 39.2	1.70	1 7.4	2.01	1.5
30	15 22.5	15 17.1	56 18.9	1.67	55 59.1	1.61	1 55.4	2.00	2.5
31	15 11.9	15 7.1	55 40.1	-1.53	55 22.5	-1.41	2 43.3	1.99	3.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	13 5 35.31	2.1174	S. 3 55 6.0	10.303	0	14 45 42.78	2.0662	S. 11 18 23.8	7.325
1	13 7 42.30	2.1186	4 5 23.1	10.288	1	14 47 46.74	2.0658	11 26 18.0	7.372
2	13 9 49.18	2.1188	4 15 38.2	10.234	2	14 49 50.67	2.0654	11 34 8.4	7.509
3	13 11 55.95	2.1120	4 25 51.2	10.190	3	14 51 54.58	2.0650	11 41 55.0	7.745
4	13 14 2.62	2.1103	4 36 2.1	10.163	4	14 53 58.47	2.0647	11 49 37.7	7.681
5	13 16 9.19	2.1086	4 46 10.8	10.136	5	14 56 2.34	2.0644	11 57 16.6	7.617
6	13 18 15.65	2.1069	4 56 17.2	10.089	6	14 58 6.20	2.0641	12 4 51.7	7.552
7	13 20 22.02	2.1053	5 6 21.4	10.051	7	15 0 10.04	2.0639	12 12 22.9	7.487
8	13 22 28.29	2.1037	5 16 23.3	10.013	8	15 2 13.87	2.0637	12 19 50.1	7.421
9	13 24 34.47	2.1022	5 26 22.8	9.971	9	15 4 17.69	2.0635	12 27 13.4	7.355
10	13 26 40.55	2.1007	5 36 19.8	9.930	10	15 6 21.49	2.0633	12 34 32.7	7.289
11	13 28 46.55	2.0993	5 46 14.4	9.889	11	15 8 25.28	2.0631	12 41 48.0	7.223
12	13 30 52.46	2.0978	5 56 6.6	9.847	12	15 10 29.06	2.0629	12 48 59.3	7.156
13	13 32 58.28	2.0963	6 5 56.2	9.806	13	15 12 32.83	2.0628	12 56 6.5	7.087
14	13 35 4.02	2.0950	6 15 43.2	9.762	14	15 14 36.60	2.0627	13 3 9.7	7.019
15	13 37 9.68	2.0937	6 25 27.6	9.718	15	15 16 40.36	2.0627	13 10 8.8	6.950
16	13 39 15.26	2.0924	6 35 9.4	9.673	16	15 18 44.12	2.0626	13 17 3.7	6.881
17	13 41 20.76	2.0911	6 44 48.5	9.628	17	15 20 47.87	2.0625	13 23 54.4	6.811
18	13 43 26.19	2.0898	6 54 24.8	9.582	18	15 22 51.62	2.0625	13 30 41.0	6.741
19	13 45 31.54	2.0886	7 3 58.4	9.536	19	15 24 55.37	2.0625	13 37 23.4	6.671
20	13 47 36.82	2.0874	7 13 29.1	9.489	20	15 26 59.12	2.0625	13 44 1.5	6.600
21	13 49 42.03	2.0863	7 22 57.0	9.441	21	15 29 2.86	2.0624	13 50 35.4	6.529
22	13 51 47.17	2.0852	7 32 22.0	9.393	22	15 31 6.61	2.0625	13 57 5.0	6.458
23	13 53 52.25	2.0841	S. 7 41 44.1	9.345	23	15 33 10.36	2.0625	S. 14 3 30.4	6.387
MONDAY 2.					WEDNESDAY 4.				
0	13 55 57.26	2.0830	S. 7 51 3.2	9.293	0	15 35 14.11	2.0625	S. 14 9 51.5	6.316
1	13 58 2.21	2.0820	8 0 19.3	9.243	1	15 37 17.86	2.0625	14 16 8.3	6.244
2	14 0 7.10	2.0810	8 9 32.4	9.192	2	15 39 21.61	2.0625	14 22 20.8	6.172
3	14 2 11.93	2.0800	8 18 42.4	9.141	3	15 41 25.37	2.0627	14 28 28.9	6.099
4	14 4 16.70	2.0791	8 27 49.3	9.089	4	15 43 29.13	2.0628	14 34 32.7	6.027
5	14 6 21.42	2.0782	8 36 53.0	9.038	5	15 45 32.90	2.0629	14 40 32.1	5.954
6	14 8 26.08	2.0773	8 45 53.6	8.983	6	15 47 36.68	2.0630	14 46 27.2	5.881
7	14 10 30.69	2.0764	8 54 51.0	8.929	7	15 49 40.46	2.0631	14 52 17.9	5.807
8	14 12 35.25	2.0756	9 3 45.1	8.875	8	15 51 44.25	2.0632	14 58 4.1	5.733
9	14 14 39.76	2.0748	9 12 36.0	8.820	9	15 53 48.05	2.0634	15 3 45.9	5.658
10	14 16 44.23	2.0740	9 21 23.5	8.764	10	15 55 51.86	2.0635	15 9 23.2	5.584
11	14 18 48.65	2.0733	9 30 7.7	8.708	11	15 57 55.67	2.0637	15 14 56.0	5.508
12	14 20 53.03	2.0726	9 38 48.5	8.652	12	15 59 59.50	2.0639	15 20 24.3	5.434
13	14 22 57.37	2.0720	9 47 25.9	8.595	13	16 2 3.34	2.0641	15 25 48.1	5.358
14	14 25 1.67	2.0713	9 55 59.9	8.537	14	16 4 7.19	2.0643	15 31 7.3	5.282
15	14 27 5.93	2.0707	10 4 30.4	8.479	15	16 6 11.05	2.0645	15 36 21.9	5.206
16	14 29 10.15	2.0701	10 12 57.4	8.421	16	16 8 14.93	2.0647	15 41 32.0	5.130
17	14 31 14.34	2.0695	10 21 20.9	8.363	17	16 10 18.82	2.0649	15 46 37.5	5.053
18	14 33 18.49	2.0689	10 29 40.8	8.302	18	16 12 22.72	2.0651	15 51 38.4	4.976
19	14 35 22.61	2.0684	10 37 57.1	8.243	19	16 14 26.63	2.0653	15 56 34.7	4.898
20	14 37 26.70	2.0679	10 46 9.8	8.181	20	16 16 30.56	2.0655	16 1 26.3	4.822
21	14 39 30.76	2.0674	10 54 18.8	8.120	21	16 18 34.50	2.0658	16 6 13.3	4.745
22	14 41 34.79	2.0670	11 2 24.2	8.059	22	16 20 38.46	2.0661	16 10 55.7	4.667
23	14 43 38.80	2.0666	11 10 25.9	7.997	23	16 22 42.44	2.0664	16 15 33.3	4.589
24	14 45 42.78	2.0662	S. 11 18 23.8	7.935	24	16 24 46.43	2.0666	S. 16 20 6.3	4.411

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	16 24 46.43	2.0666	S. 16° 20' 6.3	4.511	0	18 4 16.54	2.0779	S. 18° 23' 5.9	0.564
1	16 26 50.44	2.0669	16 24 34.6	4.492	1	18 6 21.92	2.0780	18 23 37.2	0.479
2	16 28 54.46	2.0671	16 28 58.1	4.354	2	18 8 25.90	2.0781	18 24 3.4	0.394
3	16 30 58.50	2.0674	16 33 17.0	4.275	3	18 10 30.59	2.0782	18 24 24.5	0.309
4	16 33 2.55	2.0677	16 37 31.1	4.196	4	18 12 35.28	2.0783	18 24 40.5	0.226
5	16 35 6.62	2.0680	16 41 40.4	4.117	5	18 14 39.97	2.0783	18 24 51.4	0.140
6	16 37 10.71	2.0682	16 45 45.0	4.038	6	18 16 44.67	2.0784	18 24 57.3	0.056
7	16 39 14.81	2.0685	16 49 44.8	3.958	7	18 18 49.37	2.0784	18 24 58.1	0.029
8	16 41 18.93	2.0688	16 53 39.9	3.878	8	18 20 54.08	2.0784	18 24 53.8	0.113
9	16 43 23.07	2.0691	16 57 30.1	3.798	9	18 22 58.78	2.0784	18 24 44.4	0.198
10	16 45 27.22	2.0694	17 1 15.5	3.718	10	18 25 3.49	2.0784	18 24 30.0	0.283
11	16 47 31.39	2.0697	17 4 56.1	3.637	11	18 27 8.20	2.0784	18 24 10.4	0.368
12	16 49 35.58	2.0700	17 8 31.9	3.556	12	18 29 12.90	2.0784	18 23 45.8	0.452
13	16 51 39.79	2.0703	17 12 2.8	3.475	13	18 31 17.60	2.0783	18 23 16.1	0.537
14	16 53 44.01	2.0706	17 15 28.9	3.394	14	18 33 22.90	2.0783	18 22 41.3	0.622
15	16 55 48.25	2.0708	17 18 50.1	3.313	15	18 35 27.00	2.0783	18 22 1.4	0.707
16	16 57 52.51	2.0711	17 22 6.4	3.232	16	18 37 31.70	2.0782	18 21 16.5	0.791
17	16 59 56.79	2.0714	17 25 17.9	3.150	17	18 39 36.39	2.0782	18 20 26.5	0.876
18	17 2 1.08	2.0717	17 28 24.4	3.068	18	18 41 41.08	2.0781	18 19 31.4	0.960
19	17 4 5.39	2.0720	17 31 26.0	2.986	19	18 43 45.77	2.0781	18 18 31.2	1.045
20	17 6 9.72	2.0722	17 34 22.7	2.904	20	18 45 50.45	2.0780	18 17 26.0	1.129
21	17 8 14.06	2.0725	17 37 14.5	2.822	21	18 47 55.12	2.0778	18 16 15.8	1.213
22	17 10 18.42	2.0728	17 40 1.4	2.740	22	18 49 59.79	2.0777	18 15 0.5	1.297
23	17 12 22.80	2.0731	S. 17° 42' 43.3	2.658	23	18 52 4.45	2.0776	S. 18° 13' 40.1	1.381
FRIDAY 6.					SUNDAY 8.				
0	17 14 27.19	2.0733	S. 17° 45' 20.3	2.576	0	18 54 9.10	2.0775	S. 18° 12' 14.6	1.465
1	17 16 31.60	2.0736	17 47 52.3	2.493	1	18 56 13.75	2.0773	18 10 44.1	1.550
2	17 18 36.02	2.0739	17 50 19.4	2.410	2	18 58 18.38	2.0771	18 9 8.6	1.634
3	17 20 40.46	2.0741	17 52 41.5	2.327	3	19 0 23.00	2.0769	18 7 28.0	1.718
4	17 22 44.91	2.0743	17 54 58.6	2.244	4	19 2 27.61	2.0768	18 5 42.4	1.802
5	17 24 49.38	2.0746	17 57 10.8	2.161	5	19 4 32.21	2.0766	18 3 51.8	1.886
6	17 26 53.86	2.0748	17 59 17.9	2.078	6	19 6 36.80	2.0764	18 1 56.1	1.970
7	17 28 58.35	2.0750	18 1 20.0	1.994	7	19 8 41.38	2.0762	17 59 55.4	2.053
8	17 31 2.86	2.0752	18 3 17.1	1.911	8	19 10 45.94	2.0760	17 57 49.7	2.137
9	17 33 7.38	2.0754	18 5 9.2	1.827	9	19 12 50.49	2.0757	17 55 38.9	2.220
10	17 35 11.91	2.0757	18 6 56.3	1.743	10	19 14 55.02	2.0755	17 53 23.2	2.304
11	17 37 16.46	2.0759	18 8 38.4	1.659	11	19 16 59.54	2.0753	17 51 2.5	2.387
12	17 39 21.02	2.0761	18 10 15.4	1.575	12	19 19 4.05	2.0750	17 48 36.8	2.470
13	17 41 25.59	2.0763	18 11 47.4	1.491	13	19 21 8.54	2.0747	17 46 6.1	2.553
14	17 43 30.17	2.0765	18 13 14.4	1.407	14	19 23 13.01	2.0745	17 43 30.5	2.636
15	17 45 34.76	2.0767	18 14 36.3	1.323	15	19 25 17.47	2.0742	17 40 49.9	2.718
16	17 47 39.37	2.0769	18 15 53.2	1.239	16	19 27 21.91	2.0739	17 38 4.3	2.801
17	17 49 43.98	2.0770	18 17 5.0	1.155	17	19 29 26.33	2.0736	17 35 13.8	2.883
18	17 51 48.61	2.0773	18 18 11.8	1.071	18	19 31 30.74	2.0733	17 32 18.4	2.965
19	17 53 53.25	2.0775	18 19 13.5	0.986	19	19 33 35.13	2.0729	17 29 18.1	3.046
20	17 55 57.89	2.0776	18 20 10.1	0.902	20	19 35 39.49	2.0726	17 26 12.9	3.128
21	17 58 2.54	2.0778	18 21 1.6	0.817	21	19 37 43.84	2.0723	17 23 2.8	3.209
22	18 0 7.20	2.0777	18 21 48.1	0.733	22	19 39 48.16	2.0720	17 19 47.8	3.291
23	18 2 11.87	2.0778	18 22 29.5	0.648	23	19 41 52.47	2.0716	17 16 27.9	3.372
24	18 4 16.54	2.0779	S. 18° 23' 5.9	0.564	24	19 43 56.75	2.0713	S. 17° 13' 3.2	3.453

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	19 43 56.75	2.0712	S. 17° 13' 3.2	2.483	0	21 22 51.81	2.0492	S. 12° 58' 47.7	7.018
1	19 46 1.01	2.0708	17 9 33.6	2.533	1	21 24 54.81	2.0496	12 51 44.7	7.083
2	19 48 5.25	2.0704	17 5 59.2	2.614	2	21 26 57.79	2.0494	12 44 37.8	7.148
3	19 50 9.46	2.0700	17 2 19.9	2.694	3	21 29 0.74	2.0490	12 37 27.0	7.213
4	19 52 13.65	2.0697	16 58 35.8	2.775	4	21 31 3.67	2.0486	12 30 12.3	7.278
5	19 54 17.82	2.0693	16 54 46.9	2.856	5	21 33 6.58	2.0483	12 22 53.8	7.339
6	19 56 21.96	2.0689	16 50 53.2	2.936	6	21 35 9.47	2.0479	12 15 31.6	7.403
7	19 58 26.08	2.0686	16 46 54.7	3.015	7	21 37 12.34	2.0476	12 8 5.6	7.465
8	20 0 30.18	2.0681	16 42 51.4	3.094	8	21 39 15.18	2.0473	12 0 35.8	7.527
9	20 2 34.25	2.0677	16 38 43.4	3.173	9	21 41 18.01	2.0470	11 53 2.3	7.586
10	20 4 38.30	2.0673	16 34 30.6	3.252	10	21 43 20.82	2.0467	11 45 25.2	7.649
11	20 6 42.32	2.0668	16 30 13.1	3.331	11	21 45 23.61	2.0464	11 37 44.4	7.710
12	20 8 46.31	2.0664	16 25 50.9	3.409	12	21 47 26.39	2.0461	11 30 0.0	7.770
13	20 10 50.28	2.0659	16 21 24.0	3.487	13	21 49 29.15	2.0458	11 22 12.0	7.829
14	20 12 54.22	2.0656	16 16 52.4	3.565	14	21 51 31.90	2.0456	11 14 20.5	7.888
15	20 14 58.13	2.0650	16 12 16.1	3.643	15	21 53 34.63	2.0454	11 6 25.4	7.946
16	20 17 2.02	2.0646	16 7 35.2	3.720	16	21 55 37.35	2.0451	10 58 26.9	8.004
17	20 19 5.88	2.0641	16 2 49.7	3.797	17	21 57 40.05	2.0449	10 50 24.9	8.061
18	20 21 9.71	2.0637	15 57 59.6	3.874	18	21 59 42.74	2.0447	10 42 19.5	8.116
19	20 23 13.51	2.0632	15 53 4.9	3.952	19	22 1 45.42	2.0446	10 34 10.7	8.174
20	20 25 17.29	2.0628	15 48 5.6	4.028	20	22 3 48.09	2.0443	10 25 58.5	8.229
21	20 27 21.04	2.0623	15 43 1.8	4.103	21	22 5 50.75	2.0442	10 17 43.0	8.284
22	20 29 24.76	2.0618	15 37 53.4	4.177	22	22 7 53.40	2.0442	10 9 24.3	8.339
23	20 31 28.45	2.0613	S. 15° 32' 40.6	4.252	23	22 9 56.05	2.0441	S. 10° 1' 2.3	8.394
TUESDAY 10.					THURSDAY 12.				
0	20 33 32.12	2.0609	S. 15° 27' 23.2	4.327	0	22 11 58.69	2.0440	S. 9° 52' 37.0	8.447
1	20 35 35.76	2.0604	15 22 1.3	4.402	1	22 14 1.33	2.0439	9 44 8.6	8.500
2	20 37 39.37	2.0599	15 16 35.0	4.476	2	22 16 3.96	2.0438	9 35 37.0	8.552
3	20 39 42.95	2.0594	15 11 4.2	4.550	3	22 18 6.59	2.0438	9 27 2.3	8.601
4	20 41 46.50	2.0589	15 5 29.0	4.624	4	22 20 9.21	2.0437	9 18 24.5	8.650
5	20 43 50.02	2.0585	14 59 49.3	4.697	5	22 22 11.83	2.0437	9 9 43.7	8.706
6	20 45 53.52	2.0580	14 54 5.3	4.770	6	22 24 14.45	2.0437	9 0 59.8	8.760
7	20 47 56.99	2.0576	14 48 16.9	4.843	7	22 26 17.07	2.0436	8 52 13.0	8.805
8	20 50 0.43	2.0571	14 42 24.1	4.916	8	22 28 19.70	2.0436	8 43 23.3	8.854
9	20 52 3.84	2.0567	14 36 27.0	4.988	9	22 30 22.33	2.0436	8 34 30.6	8.902
10	20 54 7.23	2.0562	14 30 25.6	5.060	10	22 32 24.96	2.0436	8 25 35.1	8.949
11	20 56 10.58	2.0557	14 24 19.9	5.131	11	22 34 27.60	2.0441	8 16 36.8	8.996
12	20 58 13.91	2.0552	14 18 9.9	5.202	12	22 36 30.25	2.0442	8 7 35.7	9.041
13	21 0 17.21	2.0548	14 11 55.7	5.272	13	22 38 32.91	2.0443	7 58 31.9	9.087
14	21 2 20.48	2.0544	14 5 37.3	5.342	14	22 40 35.57	2.0445	7 49 25.3	9.133
15	21 4 23.73	2.0539	13 59 14.7	5.411	15	22 42 38.24	2.0447	7 40 16.1	9.176
16	21 6 26.95	2.0535	13 52 48.0	5.480	16	22 44 40.93	2.0449	7 31 4.2	9.219
17	21 8 30.15	2.0531	13 46 17.2	5.548	17	22 46 43.63	2.0452	7 21 49.8	9.263
18	21 10 33.32	2.0526	13 39 42.2	5.616	18	22 48 46.35	2.0454	7 12 32.8	9.304
19	21 12 36.46	2.0522	13 33 3.2	5.684	19	22 50 49.08	2.0457	7 3 13.3	9.346
20	21 14 39.58	2.0517	13 26 20.1	5.751	20	22 52 51.83	2.0460	6 53 51.4	9.384
21	21 16 42.67	2.0513	13 19 33.0	5.818	21	22 54 54.60	2.0463	6 44 27.0	9.426
22	21 18 45.74	2.0509	13 12 41.9	5.885	22	22 56 57.39	2.0467	6 35 0.3	9.466
23	21 20 48.79	2.0506	13 5 46.8	5.952	23	22 59 0.20	2.0471	6 25 31.2	9.504
24	21 22 51.81	2.0502	S. 12° 58' 47.7	7.018	24	23 1 3.04	2.0475	S. 6° 15' 59.8	9.542

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	23 1 3.04	2.0476	S. 6 15 59.8	9.649	0	0 40 19.70	2.1008	N. 1 51 6.8	10.436
1	23 3 5.90	2.0479	6 6 26.2	9.679	1	0 42 25.80	2.1027	2 1 35.0	10.436
2	23 5 8.79	2.0483	5 56 50.3	9.616	2	0 44 32.02	2.1046	2 12 1.0	10.432
3	23 7 11.70	2.0486	5 47 12.3	9.662	3	0 46 38.36	2.1066	2 22 26.8	10.428
4	23 9 14.65	2.0493	5 37 32.1	9.687	4	0 48 44.81	2.1086	2 32 52.3	10.423
5	23 11 17.63	2.0499	5 27 49.8	9.723	5	0 50 51.38	2.1106	2 43 17.5	10.416
6	23 13 20.64	2.0504	5 18 5.5	9.756	6	0 52 58.08	2.1126	2 53 42.2	10.408
7	23 15 23.68	2.0510	5 8 19.2	9.788	7	0 55 4.90	2.1147	3 4 6.5	10.400
8	23 17 26.76	2.0516	4 58 31.0	9.820	8	0 57 11.84	2.1168	3 14 30.2	10.391
9	23 19 29.87	2.0523	4 48 40.8	9.852	9	0 59 18.91	2.1190	3 24 53.4	10.381
10	23 21 33.03	2.0530	4 38 48.8	9.883	10	1 1 26.12	2.1211	3 35 15.9	10.370
11	23 23 36.23	2.0537	4 28 55.0	9.912	11	1 3 33.45	2.1233	3 45 37.8	10.358
12	23 25 39.47	2.0544	4 18 59.4	9.941	12	1 5 40.92	2.1256	3 55 58.9	10.346
13	23 27 42.75	2.0551	4 9 2.0	9.969	13	1 7 48.52	2.1278	4 6 19.2	10.333
14	23 29 46.08	2.0559	3 59 3.0	9.996	14	1 9 56.26	2.1301	4 16 38.7	10.317
15	23 31 49.46	2.0568	3 49 2.4	10.023	15	1 12 4.14	2.1326	4 26 57.2	10.300
16	23 33 52.89	2.0576	3 39 0.9	10.049	16	1 14 12.16	2.1349	4 37 14.7	10.283
17	23 35 56.37	2.0584	3 28 56.5	10.074	17	1 16 20.32	2.1373	4 47 31.2	10.266
18	23 37 59.90	2.0593	3 18 51.3	10.098	18	1 18 28.63	2.1397	4 57 46.6	10.248
19	23 40 3.49	2.0603	3 8 44.7	10.122	19	1 20 37.09	2.1422	5 8 0.8	10.227
20	23 42 7.13	2.0613	2 58 36.7	10.146	20	1 22 45.69	2.1447	5 18 13.8	10.206
21	23 44 10.83	2.0623	2 48 27.3	10.167	21	1 24 54.44	2.1472	5 28 25.5	10.184
22	23 46 14.60	2.0633	2 38 16.7	10.188	22	1 27 3.35	2.1497	5 38 35.9	10.161
23	23 48 18.42	2.0643	S. 2 28 4.8	10.208	23	1 29 12.41	2.1523	N. 5 48 44.9	10.138
SATURDAY 14.					MONDAY 16.				
0	23 50 22.31	2.0653	S. 2 17 51.8	10.227	0	1 31 21.63	2.1548	N. 5 58 52.5	10.114
1	23 52 26.26	2.0664	2 7 37.6	10.246	1	1 33 31.00	2.1576	6 8 58.5	10.088
2	23 54 30.28	2.0676	1 57 22.3	10.264	2	1 35 40.54	2.1603	6 19 3.0	10.061
3	23 56 34.37	2.0688	1 47 5.9	10.281	3	1 37 50.24	2.1630	6 29 5.8	10.033
4	23 58 38.53	2.0700	1 36 48.5	10.297	4	1 40 0.10	2.1657	6 39 6.9	10.004
5	0 0 42.77	2.0713	1 26 30.2	10.313	5	1 42 10.13	2.1686	6 49 6.2	9.973
6	0 2 47.08	2.0726	1 16 10.9	10.328	6	1 44 20.32	2.1713	6 59 3.7	9.942
7	0 4 51.47	2.0738	1 5 50.8	10.342	7	1 46 30.68	2.1741	7 8 59.3	9.910
8	0 6 55.93	2.0751	0 55 20.9	10.356	8	1 48 41.21	2.1769	7 18 53.0	9.877
9	0 9 0.48	2.0765	0 45 8.2	10.367	9	1 50 51.91	2.1798	7 28 44.7	9.844
10	0 11 5.11	2.0779	0 34 45.9	10.377	10	1 53 2.78	2.1827	7 38 34.3	9.809
11	0 13 9.82	2.0793	0 24 22.9	10.387	11	1 55 13.83	2.1856	7 48 21.8	9.773
12	0 15 14.62	2.0808	0 13 59.4	10.396	12	1 57 25.05	2.1885	7 58 7.0	9.736
13	0 17 19.51	2.0823	S. 0 3 35.3	10.406	13	1 59 36.45	2.1915	8 7 50.0	9.697
14	0 19 24.49	2.0838	N. 0 6 49.2	10.413	14	2 1 48.03	2.1946	8 17 30.7	9.656
15	0 21 29.56	2.0853	0 17 14.2	10.419	15	2 3 59.79	2.1976	8 27 9.1	9.613
16	0 23 34.73	2.0869	0 27 39.5	10.426	16	2 6 11.74	2.2006	8 36 45.0	9.577
17	0 25 39.99	2.0886	0 38 5.2	10.430	17	2 8 23.87	2.2037	8 46 18.4	9.536
18	0 27 45.35	2.0903	0 48 31.1	10.434	18	2 10 36.18	2.2067	8 55 49.2	9.493
19	0 29 50.81	2.0919	0 58 57.2	10.436	19	2 12 48.68	2.2098	9 5 17.4	9.448
20	0 31 56.38	2.0936	1 9 23.4	10.438	20	2 15 1.36	2.2130	9 14 42.9	9.402
21	0 34 2.05	2.0953	1 19 49.7	10.439	21	2 17 14.23	2.2162	9 24 5.7	9.356
22	0 36 7.82	2.0971	1 30 16.1	10.439	22	2 19 27.30	2.2194	9 33 25.6	9.309
23	0 38 13.70	2.0990	1 40 42.5	10.439	23	2 21 40.55	2.2226	9 42 42.7	9.260
24	0 40 19.70	2.1008	N. 1 51 8.8	10.438	24	2 23 54.00	2.2257	N. 9 51 56.9	9.210

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	2 23 54.00	2.2267	N. 9 51' 56.9"	8.210	0	4 14 37.53	2.2874	N. 15 57' 51.7"	5.000
1	2 26 7.64	2.2269	10 1 8.0	9.100	1	4 17 0.87	2.2896	16 3 28.4	5.563
2	2 28 21.47	2.2273	10 10 16.1	9.109	2	4 19 24.39	2.2926	16 8 59.3	5.465
3	2 30 35.50	2.2285	10 19 21.1	9.056	3	4 21 48.10	2.2967	16 14 24.3	5.267
4	2 32 49.73	2.2289	10 28 22.9	9.003	4	4 24 11.99	2.2998	16 19 43.3	5.208
5	2 35 4.16	2.2421	10 37 21.4	8.948	5	4 26 36.06	2.4028	16 24 56.4	5.180
6	2 37 18.78	2.2454	10 46 16.7	8.893	6	4 29 0.32	2.4058	16 30 3.4	5.097
7	2 39 33.60	2.2467	10 55 8.6	8.837	7	4 31 24.75	2.4087	16 35 4.3	4.965
8	2 41 48.62	2.2490	11 3 57.1	8.779	8	4 33 49.36	2.4116	16 39 59.1	4.802
9	2 44 3.84	2.2504	11 12 42.1	8.720	9	4 36 14.14	2.4145	16 44 47.7	4.760
10	2 46 19.27	2.2508	11 21 23.5	8.660	10	4 38 39.10	2.4173	16 49 30.1	4.684
11	2 48 34.90	2.2523	11 30 1.3	8.599	11	4 41 4.22	2.4201	16 54 6.2	4.549
12	2 50 50.74	2.2556	11 38 35.4	8.537	12	4 43 29.51	2.4229	16 58 36.1	4.444
13	2 53 6.78	2.2590	11 47 5.8	8.475	13	4 45 54.96	2.4256	17 2 59.6	4.280
14	2 55 23.02	2.2724	11 55 32.4	8.411	14	4 48 20.58	2.4283	17 7 16.7	4.222
15	2 57 39.47	2.2768	12 3 55.1	8.346	15	4 50 46.36	2.4310	17 11 27.4	4.126
16	2 59 56.12	2.2789	12 12 13.9	8.280	16	4 53 12.30	2.4336	17 15 31.7	4.017
17	3 2 12.98	2.2828	12 20 28.7	8.213	17	4 55 38.39	2.4362	17 19 29.5	3.908
18	3 4 30.05	2.2862	12 28 39.5	8.145	18	4 58 4.64	2.4387	17 23 20.7	3.788
19	3 6 47.32	2.2890	12 36 46.2	8.077	19	5 0 31.03	2.4411	17 27 5.3	3.668
20	3 9 4.80	2.2930	12 44 48.7	8.007	20	5 2 57.57	2.4435	17 30 43.3	3.578
21	3 11 22.49	2.2963	12 52 47.0	7.935	21	5 5 24.25	2.4459	17 34 14.6	3.467
22	3 13 40.38	2.2999	13 0 41.0	7.864	22	5 7 51.08	2.4483	17 37 39.3	3.344
23	3 15 58.48	2.3034	N. 13 8 30.7	7.792	23	5 10 18.05	2.4506	N. 17 40 57.3	3.243
WEDNESDAY 18.					FRIDAY 20.				
0	3 18 16.79	2.3068	N. 13 16 16.0	7.718	0	5 12 45.15	2.4528	N. 17 44 8.5	3.130
1	3 20 35.31	2.3103	13 23 56.8	7.643	1	5 15 12.38	2.4549	17 47 12.9	3.017
2	3 22 54.03	2.3138	13 31 33.1	7.567	2	5 17 39.74	2.4571	17 50 10.5	2.903
3	3 25 12.96	2.3173	13 39 4.8	7.490	3	5 20 7.23	2.4593	17 53 1.2	2.788
4	3 27 32.10	2.3207	13 46 31.9	7.413	4	5 22 34.84	2.4613	17 55 45.0	2.673
5	3 29 51.44	2.3241	13 53 54.3	7.335	5	5 25 2.57	2.4631	17 58 21.9	2.548
6	3 32 10.99	2.3275	14 1 11.9	7.255	6	5 27 30.41	2.4650	18 0 51.9	2.443
7	3 34 30.75	2.3310	14 8 24.7	7.173	7	5 29 58.39	2.4669	18 3 14.9	2.326
8	3 36 50.71	2.3344	14 15 32.7	7.089	8	5 32 26.44	2.4687	18 5 30.8	2.206
9	3 39 10.88	2.3378	14 22 35.7	7.005	9	5 34 54.61	2.4704	18 7 39.8	2.080
10	3 41 31.25	2.3413	14 29 33.7	6.920	10	5 37 22.89	2.4721	18 9 41.7	1.973
11	3 43 51.83	2.3447	14 36 26.7	6.834	11	5 39 51.27	2.4738	18 11 36.5	1.854
12	3 46 12.61	2.3481	14 43 14.6	6.756	12	5 42 19.74	2.4753	18 13 24.2	1.730
13	3 48 33.59	2.3514	14 49 57.3	6.683	13	5 44 48.30	2.4768	18 15 4.8	1.610
14	3 50 54.78	2.3548	14 56 34.8	6.601	14	5 47 16.95	2.4782	18 16 38.3	1.490
15	3 53 16.17	2.3582	15 3 7.1	6.493	15	5 49 45.68	2.4796	18 18 4.6	1.379
16	3 55 37.76	2.3615	15 9 34.0	6.404	16	5 52 14.50	2.4809	18 19 23.8	1.266
17	3 57 59.55	2.3648	15 15 55.6	6.314	17	5 54 43.39	2.4822	18 20 35.8	1.149
18	4 0 21.53	2.3681	15 22 11.7	6.223	18	5 57 12.36	2.4835	18 21 40.6	1.019
19	4 2 43.71	2.3713	15 28 22.4	6.132	19	5 59 41.39	2.4844	18 22 38.1	0.886
20	4 5 6.09	2.3746	15 34 27.5	6.040	20	6 2 10.49	2.4858	18 23 28.4	0.777
21	4 7 28.66	2.3778	15 40 27.1	5.945	21	6 4 39.65	2.4869	18 24 11.4	0.637
22	4 9 51.43	2.3810	15 46 21.0	5.851	22	6 7 8.87	2.4874	18 24 47.2	0.536
23	4 12 14.38	2.3843	15 52 9.2	5.756	23	6 9 38.14	2.4883	18 25 15.7	0.418
24	4 14 37.53	2.3874	N. 15 57 51.7	5.660	24	6 12 7.46	2.4891	N. 18 25 37.0	0.294

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	6 12 7.46	2.4591	N.18° 25' 37.0"	0.294	0	8 11 15.12	2.4597	N.16° 21' 24.7"	5.346
1	6 14 36.82	2.4595	18 25 51.1	0.772	1	8 13 42.10	2.4485	16 16 0.7	5.452
2	6 17 16.23	2.4605	18 25 57.7	0.060	2	8 16 8.94	2.4463	16 10 30.4	5.567
3	6 19 35.68	2.4611	18 25 57.0	0.673	3	8 18 35.65	2.4440	16 4 53.8	5.662
4	6 22 5.16	2.4616	18 25 49.0	0.185	4	8 21 2.22	2.4417	15 59 11.0	5.766
5	6 24 34.67	2.4620	18 25 33.7	0.316	5	8 23 28.65	2.4395	15 53 21.9	5.869
6	6 27 4.20	2.4624	18 25 11.1	0.488	6	8 25 51.94	2.4380	15 47 26.7	5.971
7	6 29 33.76	2.4628	18 24 41.2	0.560	7	8 28 21.08	2.4344	15 41 25.4	6.072
8	6 32 3.33	2.4630	18 24 3.9	0.692	8	8 30 47.07	2.4310	15 35 18.0	6.172
9	6 34 32.91	2.4631	18 23 19.3	0.804	9	8 33 12.91	2.4284	15 29 4.6	6.272
10	6 37 2.50	2.4632	18 22 27.4	0.926	10	8 35 38.60	2.4260	15 22 45.3	6.371
11	6 39 32.10	2.4638	18 21 28.2	1.048	11	8 38 4.13	2.4243	15 16 20.1	6.469
12	6 42 1.70	2.4638	18 20 21.6	1.170	12	8 40 29.51	2.4217	15 9 49.0	6.566
13	6 44 31.30	2.4638	18 19 7.7	1.292	13	8 42 54.73	2.4190	15 3 12.1	6.662
14	6 47 0.89	2.4631	18 17 46.6	1.413	14	8 45 19.79	2.4168	14 56 29.5	6.766
15	6 49 30.47	2.4628	18 16 18.2	1.534	15	8 47 44.69	2.4136	14 49 41.2	6.863
16	6 52 0.03	2.4625	18 14 42.5	1.655	16	8 50 9.42	2.4109	14 42 47.2	6.946
17	6 54 29.57	2.4623	18 12 59.5	1.776	17	8 52 33.99	2.4081	14 35 47.7	7.038
18	6 56 50.09	2.4616	18 11 9.3	1.897	18	8 54 58.29	2.4053	14 28 42.6	7.129
19	6 59 28.58	2.4616	18 9 11.8	2.018	19	8 57 22.62	2.4024	14 21 32.1	7.220
20	7 1 58.04	2.4607	18 7 7.1	2.139	20	8 59 46.68	2.3995	14 14 16.2	7.310
21	7 4 27.46	2.4601	18 4 55.1	2.260	21	9 2 10.57	2.3966	14 6 54.9	7.399
22	7 6 56.85	2.4594	18 2 36.0	2.379	22	9 4 34.29	2.3939	13 59 28.4	7.488
23	7 9 26.19	2.4587	N.18° 0' 9.7"	2.498	23	9 6 57.83	2.3909	N.13° 51' 56.6"	7.579
SUNDAY 22.					TUESDAY 24.				
0	7 11 55.49	2.4578	N.17° 57' 36.2"	2.618	0	9 9 21.30	2.3880	N.13° 44' 19.7"	7.669
1	7 14 24.74	2.4570	17 54 55.5	2.737	1	9 11 44.39	2.3850	13 36 37.7	7.748
2	7 16 53.98	2.4561	17 52 7.7	2.855	2	9 14 7.40	2.3821	13 28 50.6	7.827
3	7 19 23.07	2.4551	17 49 12.8	2.974	3	9 16 30.24	2.3791	13 20 58.5	7.906
4	7 21 52.14	2.4540	17 46 10.8	3.093	4	9 18 52.89	2.3761	13 13 1.5	7.980
5	7 24 21.15	2.4529	17 43 1.7	3.210	5	9 21 15.36	2.3730	13 4 59.7	8.071
6	7 26 50.08	2.4516	17 39 45.6	3.327	6	9 23 37.65	2.3700	12 56 53.0	8.161
7	7 29 18.94	2.4504	17 36 22.4	3.444	7	9 25 59.76	2.3669	12 48 41.6	8.250
8	7 31 47.73	2.4791	17 32 52.3	3.561	8	9 28 21.68	2.3639	12 40 25.5	8.338
9	7 34 16.44	2.4778	17 29 15.2	3.677	9	9 30 43.42	2.3608	12 32 4.8	8.388
10	7 36 45.06	2.4763	17 25 31.1	3.792	10	9 33 4.97	2.3578	12 23 39.6	8.485
11	7 39 18.60	2.4748	17 21 40.1	3.907	11	9 35 26.34	2.3547	12 15 9.9	8.583
12	7 41 42.04	2.4733	17 17 42.3	4.021	12	9 37 47.53	2.3516	12 6 35.8	8.685
13	7 44 10.39	2.4717	17 13 37.6	4.135	13	9 40 8.53	2.3484	11 57 57.4	8.776
14	7 46 38.64	2.4700	17 9 26.1	4.248	14	9 42 29.34	2.3453	11 49 14.8	8.746
15	7 49 6.79	2.4683	17 5 7.9	4.360	15	9 44 49.97	2.3423	11 40 27.9	8.816
16	7 51 34.84	2.4666	17 0 42.9	4.473	16	9 47 10.41	2.3392	11 31 36.9	8.884
17	7 54 2.78	2.4648	16 56 11.2	4.584	17	9 49 30.66	2.3360	11 22 41.9	8.951
18	7 56 30.61	2.4629	16 51 32.8	4.695	18	9 51 50.73	2.3329	11 13 42.8	9.017
19	7 58 58.33	2.4610	16 46 47.8	4.806	19	9 54 10.61	2.3298	11 4 39.8	9.089
20	8 1 25.93	2.4590	16 41 56.2	4.914	20	9 56 30.30	2.3265	10 55 32.9	9.148
21	8 3 53.41	2.4570	16 36 58.1	5.026	21	9 58 49.80	2.3235	10 46 22.3	9.208
22	8 6 20.77	2.4550	16 31 53.4	5.131	22	10 1 9.12	2.3204	10 37 7.9	9.269
23	8 8 48.01	2.4529	16 26 42.3	5.239	23	10 3 28.25	2.3173	10 27 49.9	9.330
24	8 11 15.12	2.4507	N.16° 21' 24.7"	5.346	24	10 5 47.20	2.3142	N.10° 18' 28.3"	9.390

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	10 5 47.20	2.3142	N. 10° 18' 28.3	9.389	0	11 53 31.92	2.1828	N. 2° 2' 0.1	10.646
1	10 8 5.96	2.3111	10 9 3.3	9.447	1	11 55 42.82	2.1806	1 51 9.1	10.690
2	10 10 24.53	2.3080	9 59 34.8	9.504	2	11 57 53.59	2.1784	1 40 18.1	10.631
3	10 12 42.92	2.3049	9 50 2.9	9.560	3	12 0 4.23	2.1763	1 29 27.0	10.581
4	10 15 1.12	2.3018	9 40 27.7	9.614	4	12 2 14.75	2.1742	1 18 36.0	10.530
5	10 17 19.14	2.2988	9 30 49.2	9.668	5	12 4 25.14	2.1723	1 7 45.0	10.480
6	10 19 36.97	2.2957	9 21 7.6	9.720	6	12 6 35.41	2.1702	0 56 54.2	10.435
7	10 21 54.02	2.2926	9 11 22.9	9.771	7	12 8 45.56	2.1682	0 46 3.6	10.381
8	10 24 12.08	2.2896	9 1 35.1	9.821	8	12 10 55.59	2.1662	0 35 13.3	10.336
9	10 26 29.36	2.2865	8 51 44.4	9.869	9	12 13 5.50	2.1643	0 24 23.3	10.292
10	10 28 46.46	2.2835	8 41 50.8	9.916	10	12 15 15.30	2.1624	0 13 33.8	10.242
11	10 31 3.38	2.2805	8 31 54.3	9.963	11	12 17 24.99	2.1605	N. 0 2 44.7	10.614
12	10 33 20.12	2.2775	8 21 55.0	10.008	12	12 19 34.56	2.1586	S. 0 8 3.9	10.203
13	10 35 36.68	2.2745	8 11 53.2	10.052	13	12 21 44.02	2.1568	0 18 51.9	10.794
14	10 37 53.06	2.2715	8 1 48.8	10.095	14	12 23 53.38	2.1549	0 29 30.2	10.782
15	10 40 9.26	2.2686	7 51 41.9	10.136	15	12 26 2.63	2.1533	0 40 25.8	10.770
16	10 42 25.29	2.2657	7 41 32.5	10.176	16	12 28 11.77	2.1516	0 51 11.6	10.757
17	10 44 41.14	2.2628	7 31 20.8	10.215	17	12 30 20.81	2.1498	1 1 56.6	10.742
18	10 46 56.82	2.2599	7 21 6.7	10.253	18	12 32 29.75	2.1481	1 12 40.7	10.730
19	10 49 12.32	2.2569	7 10 50.4	10.289	19	12 34 38.58	2.1464	1 23 23.8	10.710
20	10 51 27.65	2.2540	7 0 32.0	10.324	20	12 36 47.32	2.1448	1 34 5.9	10.693
21	10 53 42.81	2.2512	6 50 11.5	10.360	21	12 38 55.96	2.1432	1 44 46.9	10.674
22	10 55 57.79	2.2484	6 39 48.9	10.392	22	12 41 4.51	2.1417	1 55 26.8	10.664
23	10 58 12.61	2.2456	N. 6 29 24.4	10.423	23	12 43 12.96	2.1401	S. 2 6 5.5	10.634
THURSDAY 26.					SATURDAY 28.				
0	11 0 27.26	2.2428	N. 6 18 58.0	10.454	0	12 45 21.32	2.1386	S. 2 16 42.9	10.613
1	11 2 41.74	2.2400	6 8 29.8	10.485	1	12 47 29.59	2.1371	2 27 19.0	10.601
2	11 4 56.06	2.2372	5 57 59.8	10.514	2	12 49 37.77	2.1357	2 37 53.8	10.588
3	11 7 10.21	2.2345	5 47 28.2	10.541	3	12 51 45.87	2.1343	2 48 27.1	10.543
4	11 9 24.20	2.2318	5 36 54.9	10.567	4	12 53 53.88	2.1329	2 58 59.0	10.518
5	11 11 38.03	2.2291	5 26 20.1	10.593	5	12 56 1.81	2.1315	3 9 29.3	10.493
6	11 13 51.69	2.2264	5 15 43.8	10.617	6	12 58 9.66	2.1301	3 19 58.1	10.466
7	11 16 5.20	2.2238	5 5 6.2	10.639	7	13 0 17.43	2.1288	3 30 25.2	10.438
8	11 18 18.55	2.2212	4 54 27.2	10.660	8	13 2 25.12	2.1275	3 40 50.7	10.409
9	11 20 31.74	2.2186	4 43 46.9	10.681	9	13 4 32.74	2.1263	3 51 14.4	10.380
10	11 22 44.78	2.2160	4 33 5.5	10.700	10	13 6 40.28	2.1250	4 1 36.3	10.350
11	11 24 57.67	2.2135	4 22 23.0	10.718	11	13 8 47.75	2.1238	4 11 56.4	10.319
12	11 27 10.40	2.2110	4 11 39.4	10.735	12	13 10 55.14	2.1226	4 22 14.6	10.287
13	11 29 22.98	2.2085	4 0 54.9	10.750	13	13 13 2.46	2.1215	4 32 30.8	10.253
14	11 31 35.42	2.2060	3 50 9.4	10.764	14	13 15 9.72	2.1204	4 42 45.0	10.219
15	11 33 47.71	2.2036	3 39 23.1	10.778	15	13 17 16.91	2.1193	4 52 57.1	10.184
16	11 35 59.85	2.2012	3 28 36.0	10.790	16	13 19 24.04	2.1183	5 3 7.2	10.150
17	11 38 11.85	2.1988	3 17 48.3	10.801	17	13 21 31.11	2.1173	5 13 15.1	10.113
18	11 40 23.70	2.1964	3 6 59.9	10.811	18	13 23 38.11	2.1162	5 23 20.8	10.076
19	11 42 35.42	2.1941	2 56 10.9	10.820	19	13 25 45.05	2.1152	5 33 24.2	10.038
20	11 44 46.99	2.1917	2 45 21.5	10.828	20	13 27 51.93	2.1142	5 43 25.3	9.999
21	11 46 58.42	2.1894	2 34 31.6	10.834	21	13 29 58.75	2.1132	5 53 24.0	9.959
22	11 49 9.72	2.1873	2 23 41.4	10.839	22	13 32 5.52	2.1124	6 3 20.4	9.918
23	11 51 20.89	2.1850	2 12 50.9	10.844	23	13 34 12.24	2.1115	6 13 14.2	9.877
24	11 53 31.92	2.1828	N. 2 2 0.1	10.848	24	13 36 18.90	2.1106	S. 6 23 5.6	9.836

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 29.					MONDAY 30.				
0	13 36 18.90	2.1106	S. 6° 23' 5.6	9.838	0	14 26 46.40	2.0962	S. 10° 5' 17.0	8.616
1	13 38 25.51	2.1098	6 32 54.5	9.798	1	14 28 52.17	2.0959	10 13 52.2	8.587
2	13 40 32.07	2.1090	6 42 40.8	9.760	2	14 30 57.91	2.0958	10 22 23.8	8.497
3	13 42 38.58	2.1082	6 52 24.4	9.706	3	14 33 3.63	2.0952	10 30 51.8	8.437
4	13 44 45.05	2.1074	7 2 5.4	9.680	4	14 35 9.33	2.0949	10 39 16.2	8.378
5	13 46 51.47	2.1067	7 11 43.6	9.614	5	14 37 15.01	2.0946	10 47 36.9	8.314
6	13 48 57.85	2.1059	7 21 19.1	9.568	6	14 39 20.68	2.0943	10 55 53.9	8.262
7	13 51 4.18	2.1052	7 30 51.8	9.521	7	14 41 26.33	2.0940	11 4 7.2	8.190
8	13 53 10.47	2.1045	7 40 21.6	9.473	8	14 43 31.96	2.0938	11 12 16.7	8.127
9	13 55 16.72	2.1038	7 49 48.5	9.434	9	14 45 37.58	2.0936	11 20 22.4	8.068
10	13 57 22.93	2.1031	7 59 12.5	9.374	10	14 47 43.19	2.0933	11 28 24.3	8.000
11	13 59 29.10	2.1025	8 8 33.5	9.324	11	14 49 48.78	2.0931	11 36 22.4	7.936
12	14 1 35.23	2.1019	8 17 51.4	9.274	12	14 51 54.36	2.0929	11 44 16.7	7.871
13	14 3 41.33	2.1013	8 27 6.3	9.233	13	14 53 59.93	2.0928	11 52 7.0	7.805
14	14 5 47.39	2.1008	8 36 18.1	9.171	14	14 56 5.49	2.0925	11 59 53.3	7.739
15	14 7 53.42	2.1003	8 45 26.7	9.118	15	14 58 11.04	2.0923	12 7 35.7	7.673
16	14 9 59.42	2.0998	8 54 32.2	9.064	16	15 0 16.57	2.0922	12 15 14.1	7.606
17	14 12 5.39	2.0993	9 3 34.4	9.010	17	15 2 22.10	2.0921	12 22 48.5	7.539
18	14 14 11.33	2.0938	9 12 33.4	8.966	18	15 4 27.62	2.0919	12 30 18.8	7.471
19	14 16 17.24	2.0963	9 21 29.1	8.900	19	15 6 33.13	2.0918	12 37 45.1	7.403
20	14 18 23.12	2.0978	9 30 21.5	8.844	20	15 8 38.64	2.0917	12 45 7.2	7.334
21	14 20 28.98	2.0974	9 39 10.5	8.788	21	15 10 44.14	2.0916	12 52 25.2	7.266
22	14 22 34.81	2.0970	9 47 56.1	8.731	22	15 12 49.63	2.0915	12 59 39.0	7.196
23	14 24 40.62	2.0966	9 56 38.3	8.674	23	15 14 55.12	2.0914	13 6 48.7	7.126
24	14 26 46.40	2.0962	S. 10° 5' 17.0	8.616	24	15 17 0.60	2.0913	S. 13° 13' 54.1	7.056

PHASES OF THE MOON.

☾ First Quarter,	5	11	31.1
○ Full Moon,	13	12	33.2
☾ Last Quarter,	20	15	5.0
● New Moon,	27	11	42.0

☾ Apogee,	7	10.4
☾ Perigee,	22	18.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	38° 9' 29"	2891	39° 41' 59"	2899	41° 14' 7"	2927	42° 45' 52"	2945
	Saturn E.	32 9 37	2891	30 30 44	2821	28 52 17	2840	27 14 16	2809
	Antares E.	51 47 14	2870	50 9 54	2892	48 33 3	2715	46 56 43	2728
	α Aquilæ E.	100 8 46	3023	98 39 2	3036	97 9 34	3049	95 40 22	3064
2	SUN W.	50 18 59	3033	51 48 31	3051	53 17 41	3068	54 46 30	3086
	Antares E.	39 2 59	2896	37 29 56	2896	35 57 31	2925	34 25 44	2909
	α Aquilæ E.	88 18 58	3143	86 51 41	3160	85 24 44	3178	83 58 9	3197
3	SUN W.	62 5 30	3166	63 32 20	3183	64 58 51	3197	66 25 4	3212
	Mars W.	27 45 40	3063	29 14 33	3078	30 43 8	3092	32 11 27	3108
	Spica W.	21 29 40	2949	23 0 57	2949	24 32 14	2960	26 3 30	2962
	α Aquilæ E.	76 50 52	3295	75 26 35	3317	74 2 43	3338	72 39 16	3359
	Jupiter E.	109 3 21	3779	107 28 25	3792	105 53 47	3806	104 19 28	3820
	Fomalhaut E.	109 48 55	3195	108 22 40	3208	106 56 34	3210	105 30 37	3218
4	SUN W.	73 31 56	3479	74 56 32	3492	76 20 53	3504	77 45 0	3516
	Mars W.	39 29 3	3169	40 55 49	3180	42 22 22	3192	43 48 41	3203
	Spica W.	33 38 34	2981	35 9 11	2988	36 39 39	2995	38 9 58	3002
	α Aquilæ E.	65 48 25	3479	64 27 37	3503	63 7 18	3531	61 47 28	3556
	Jupiter E.	96 32 1	3283	94 59 18	3293	93 26 50	3294	91 54 36	3294
	Fomalhaut E.	98 23 20	3263	96 58 24	3271	95 33 39	3281	94 9 5	3289
5	SUN W.	84 42 28	3365	86 5 24	3374	87 28 10	3383	88 50 46	3390
	Mars W.	50 57 12	3251	52 22 21	3266	53 47 21	3266	55 12 11	3274
	Spica W.	45 39 20	3037	47 8 47	3043	48 38 6	3049	50 7 18	3056
	Saturn W.	18 17 38	3073	19 46 21	3078	21 15 0	3078	22 43 37	3081
	α Aquilæ E.	55 16 12	3714	53 59 40	3749	52 43 45	3766	51 28 39	3777
	Jupiter E.	84 16 37	2961	82 45 35	2969	81 14 43	2976	79 44 0	2983
	Fomalhaut E.	87 8 55	3336	85 45 25	3346	84 22 6	3355	82 58 58	3364
	α Pegasi E.	101 51 9	3293	100 26 38	3298	99 2 13	3294	97 37 54	3296
6	SUN W.	95 41 51	3491	97 3 44	3494	98 25 33	3499	99 47 17	3491
	Mars W.	62 14 28	3303	63 38 36	3307	65 2 39	3311	66 26 37	3314
	Spica W.	57 31 43	3078	59 0 20	3080	60 28 54	3083	61 57 24	3086
	Saturn W.	30 5 44	3096	31 33 58	3099	33 2 9	3101	34 30 18	3104
	α Aquilæ E.	45 23 20	4071	44 12 50	4193	43 3 19	4197	41 54 50	4198
	Jupiter E.	72 12 25	3011	70 42 26	3015	69 12 32	3019	67 42 43	3023
	Fomalhaut E.	76 5 53	3409	74 43 47	3415	73 21 51	3438	72 0 6	3436
	α Pegasi E.	90 37 42	3323	89 13 56	3326	87 50 15	3331	86 26 39	3334
7	SUN W.	106 35 11	3443	107 56 40	3443	109 18 9	3443	110 39 38	3441
	Mars W.	73 25 44	3324	74 49 28	3324	76 13 11	3324	77 36 54	3324
	Spica W.	69 19 18	3091	70 47 38	3092	72 15 57	3091	73 44 17	3091
	Saturn W.	41 50 27	3108	43 18 27	3109	44 46 26	3107	46 14 27	3107
	Antares W.	25 0 5	3435	26 21 42	3409	27 43 58	3371	29 6 48	3343
	Jupiter E.	60 14 27	3032	58 44 54	3033	57 15 22	3038	55 45 49	3032
	Fomalhaut E.	65 14 5	3486	63 53 27	3490	62 33 1	3510	61 12 48	3523
	α Pegasi E.	79 29 44	3353	78 6 34	3356	76 43 27	3359	75 20 24	3363
8	SUN W.	117 27 24	3431	118 49 5	3438	120 10 50	3433	121 32 40	3430
	Mars W.	84 35 52	3313	85 59 48	3311	87 23 47	3307	88 47 50	3303
	Spica W.	81 6 20	3080	82 34 54	3078	84 3 31	3073	85 32 13	3069
	Saturn W.	53 34 56	3096	55 3 11	3093	56 31 29	3088	57 59 53	3084
	Antares W.	36 7 51	3344	37 33 8	3329	38 58 43	3315	40 24 34	3303

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	SUN	W.	44° 17' 14"	2962	45° 48' 14"	2961	47° 18' 51"	2966	48° 49' 6"	3016
	Saturn	E.	25 36 42	2679	23 59 34	2699	22 22 53	2721	20 46 41	2744
	Antares	E.	45 20 53	2762	43 45 35	2787	42 10 50	2811	40 36 37	2838
	α Aquilæ	E.	94 11 28	3078	92 42 52	3063	91 14 34	3110	89 46 36	3126
2	SUN	W.	56 14 58	3101	57 43 6	3118	58 10 54	3134	60 38 22	3161
	Antares	E.	32 54 39	2984	31 24 19	3031	29 54 45	3073	28 26 2	3114
	α Aquilæ	E.	82 31 56	3215	81 6 5	3226	79 40 37	3265	78 15 33	3275
3	SUN	W.	67 50 59	3226	69 16 38	3240	70 42 0	3263	72 7 6	3267
	Mars	W.	33 39 29	3119	35 7 16	3133	36 34 47	3144	38 2 2	3167
	Spica	W.	27 34 43	2956	29 5 51	2960	30 36 54	2967	32 7 48	2973
	α Aquilæ	E.	71 16 13	3232	69 53 36	3205	68 31 25	3229	67 9 41	3254
	Jupiter	E.	102 45 25	2833	101 11 40	2845	99 38 11	2866	98 4 58	2870
	Fomalhaut	E.	104 4 49	3226	102 39 11	3226	101 13 44	3244	99 48 27	3253
4	SUN	W.	79 8 54	3226	80 32 35	3237	81 56 4	3247	83 19 21	3256
	Mars	W.	45 14 47	3213	46 40 41	3223	48 6 22	3233	49 31 53	3242
	Spica	W.	39 40 8	3009	41 10 9	3017	42 40 1	3023	44 9 45	3030
	α Aquilæ	E.	60 28 8	3267	59 9 19	3217	57 51 3	3246	56 33 20	3260
	Jupiter	E.	90 22 36	2924	88 50 48	2933	87 19 13	2943	85 47 49	2962
	Fomalhaut	E.	92 44 41	3269	91 20 28	3209	89 56 27	3218	88 32 36	3226
5	SUN	W.	90 13 14	3267	91 35 34	3264	92 57 46	3210	94 19 51	3215
	Mars	W.	56 36 53	3261	58 1 27	3267	59 25 54	3293	60 50 14	3298
	Spica	W.	51 36 23	3060	53 5 21	3063	54 34 14	3069	56 3 1	3073
	Saturn	W.	24 12 10	3063	25 40 40	3067	27 9 5	3091	28 37 26	3093
	α Aquilæ	E.	50 13 56	3270	49 0 6	3215	47 47 1	3263	46 34 45	4015
	Jupiter	E.	78 13 26	2989	76 43 0	2996	75 12 41	3001	73 42 30	3006
	Fomalhaut	E.	81 36 0	3273	80 13 13	3293	78 50 36	3291	77 28 9	3400
	α Pegasi	E.	96 13 40	3293	94 49 32	3298	93 25 30	3313	92 1 33	3318
6	SUN	W.	101 8 58	3286	102 30 35	3288	103 52 9	3230	105 18 41	3241
	Mars	W.	67 50 32	3217	69 14 24	3219	70 38 13	3221	72 1 59	3223
	Spica	W.	63 25 51	3068	64 54 15	3069	66 22 38	3091	67 50 58	3091
	Saturn	W.	35 58 23	3105	37 26 26	3107	38 54 27	3107	40 22 28	3109
	α Aquilæ	E.	40 47 28	3246	39 41 18	3233	38 36 26	3237	37 32 58	4033
	Jupiter	E.	66 12 58	3026	64 43 17	3027	63 13 38	3030	61 44 2	3030
	Fomalhaut	E.	70 38 32	3247	69 17 9	3246	67 55 56	3267	66 34 55	3277
	α Pegasi	E.	85 3 7	3238	83 39 40	3242	82 16 17	3246	80 52 58	3250
7	SUN	W.	112 1 8	3240	113 22 39	3230	114 44 11	3237	116 5 46	3234
	Mars	W.	79 0 38	3223	80 24 24	3231	81 48 11	3219	83 12 0	3217
	Spica	W.	75 12 37	3090	76 40 59	3093	78 9 23	3096	79 37 50	3093
	Saturn	W.	47 42 28	3106	49 10 31	3104	50 38 36	3101	52 6 44	3096
	Antares	W.	30 30 10	3219	31 54 0	3206	33 18 16	3278	34 42 53	3260
	Jupiter	E.	54 16 16	3031	52 46 43	3030	51 17 8	3030	49 47 32	3027
	Fomalhaut	E.	59 52 48	3235	58 33 2	3249	57 13 32	3263	55 54 17	3278
	α Pegasi	E.	73 57 25	3266	72 34 30	3270	71 11 39	3273	69 48 52	3277
8	SUN	W.	122 54 34	3215	124 16 34	3210	125 38 39	3204	127 0 51	3209
	Mars	W.	90 11 59	3296	91 36 12	3294	93 0 31	3296	94 24 56	3282
	Spica	W.	87 1 0	3065	88 29 53	3060	89 58 51	3063	91 27 56	3050
	Saturn	W.	59 28 22	3060	60 56 56	3074	62 25 37	3070	63 54 23	3065
	Antares	W.	41 50 41	3198	43 17 4	3177	44 43 41	3184	46 10 33	3168

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
8	Jupiter E.	48° 17' 53"	3025	46° 48' 11"	3072	45° 18' 26"	3019	43° 48' 37"	3016
	Fomalhaut E.	54 35 19	3095	53 16 39	3012	51 58 18	3033	50 40 18	3052
	α Pegasi E.	68 26 9	3390	67 3 30	3364	65 40 55	3388	64 18 25	3393
9	Sun W.	128 23 9	3393	129 45 35	3386	131 8 8	3379	132 30 49	3372
	Mars W.	95 49 28	3376	97 14 7	3370	98 38 54	3364	100 3 48	3366
	Spica W.	92 57 7	3043	94 26 26	3038	95 55 52	3031	97 25 26	2026
	Saturn W.	65 23 16	3056	66 52 17	3082	68 21 26	2045	69 50 43	2039
	Antares W.	47 37 39	3141	49 4 59	3130	50 32 32	3119	52 0 19	3108
	Jupiter E.	36 18 22	2994	34 48 2	2969	33 17 36	2965	31 47 4	2979
	Fomalhaut E.	44 16 43	3794	43 1 35	3834	41 47 8	3877	40 33 25	3924
	α Pegasi E.	57 27 23	3428	56 5 32	3431	54 43 50	3439	53 22 18	3460
	α Arietis E.	100 6 21	3162	98 39 26	3164	97 12 22	3147	95 45 9	3139
10	Mars W.	107 10 30	3317	108 36 20	3208	110 2 19	3199	111 28 30	3190
	Saturn W.	77 19 20	3000	78 49 33	2991	80 19 57	2983	81 50 31	2973
	Antares W.	59 22 33	3053	60 51 40	3042	62 21 1	3031	63 50 35	3020
	α Pegasi E.	46 38 4	3525	45 18 7	3546	43 58 34	3571	42 39 28	3600
	α Arietis E.	88 26 47	3101	86 58 38	3092	85 30 19	3084	84 1 50	3076
11	Saturn W.	89 26 17	2926	90 58 3	2916	92 30 1	2906	94 2 12	2896
	Antares W.	71 21 51	2965	72 52 47	2964	74 23 58	2942	75 55 23	2931
	α Arietis E.	76 36 55	3035	75 7 26	3028	73 37 48	3020	72 8 0	3012
	Aldebaran E.	109 3 11	2894	107 30 45	2884	105 58 6	2874	104 25 14	2864
12	Saturn W.	101 46 24	2846	103 19 54	2833	104 53 39	2823	106 27 37	2813
	Antares W.	83 35 58	2876	85 8 48	2866	86 41 51	2855	88 15 8	2844
	α Aquilæ W.	41 5 52	3097	42 17 35	3016	43 30 39	3042	44 44 58	3073
	α Arietis E.	64 36 41	2972	63 6 0	2972	61 35 12	2966	60 4 17	2962
	Aldebaran E.	96 37 37	2812	95 3 24	2801	93 28 58	2791	91 54 18	2780
13	Antares W.	96 4 59	2792	97 39 37	2782	99 14 29	2772	100 49 34	2762
	α Aquilæ W.	51 12 45	3508	52 33 6	3460	53 54 15	3419	55 16 10	3382
	α Arietis E.	52 28 21	2916	50 57 0	2946	49 25 39	2946	47 54 19	2946
	Aldebaran E.	83 57 28	2736	82 21 23	2716	80 45 5	2706	79 8 33	2696
14	α Aquilæ W.	62 15 44	3325	63 41 24	3196	65 7 35	3173	66 34 16	3151
	Fomalhaut W.	31 25 22	4177	32 34 10	4037	33 45 13	3911	34 58 22	3797
	Jupiter W.	26 43 27	2927	28 21 45	2915	30 0 19	2904	31 39 7	2893
	α Arietis E.	40 19 0	2966	38 48 30	3001	37 18 19	3021	35 48 32	3043
	Aldebaran E.	71 2 24	2644	69 24 29	2635	67 46 21	2624	66 7 59	2615
15	α Aquilæ W.	73 54 9	3063	75 23 17	3037	76 52 44	3022	78 22 30	3006
	Fomalhaut W.	41 29 49	3891	42 52 16	3332	44 15 50	3278	45 40 27	3220
	Jupiter W.	39 56 52	2642	41 37 6	2633	43 17 34	2624	44 58 14	2615
	Aldebaran E.	57 52 56	2669	56 13 18	2669	54 33 27	2651	52 53 24	2643
	Pollux E.	101 34 41	2649	99 56 53	2640	98 18 53	2631	96 40 40	2621
16	α Aquilæ W.	85 55 21	2960	87 26 37	2941	88 58 4	2933	90 29 41	2926
	Jupiter W.	53 24 38	2472	55 6 30	2465	56 48 32	2466	58 30 46	2460
	Fomalhaut W.	52 56 35	3039	54 26 0	3007	55 56 4	2980	57 26 42	2964
	Aldebaran E.	44 30 15	2601	42 49 3	2494	41 7 41	2486	39 26 8	2479
	Pollux E.	88 26 34	2680	86 47 11	2672	85 7 38	2665	83 27 55	2660
17	α Aquilæ W.	98 9 41	2903	99 41 56	2801	101 14 14	2900	102 46 33	2900

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
8	Jupiter E.	42° 18' 44"	3013	40° 48' 46"	3008	39° 18' 44"	3004	37° 48' 36"	2999
	Fomalhaut E.	49 22 40	3076	48 5 27	3703	46 48 42	3730	45 32 27	3760
	α Pegasi E.	62 56 1	3208	61 33 42	3403	60 11 29	3408	58 49 22	3416
9	Sun W.	133 53 38	3364	135 16 36	3364	136 39 44	3347	138 3 1	3338
	Mars W.	101 28 50	3249	102 54 2	3243	104 19 22	3234	105 44 51	3225
	Spica W.	98 55 8	3018	100 24 59	3019	101 54 59	3003	103 25 8	2996
	Saturn W.	71 20 8	3031	72 49 42	3034	74 19 25	3017	75 49 17	3008
	Antares W.	53 28 19	3097	54 56 32	3086	56 24 59	3078	57 53 39	3064
	Jupiter E.	30 16 25	2973	28 45 40	2969	27 14 47	2963	25 43 49	2956
	Fomalhaut E.	39 20 30	3079	38 8 30	4041	36 57 31	4111	35 47 40	4191
	α Pegasi E.	52 0 58	3463	50 39 51	3474	49 18 58	3469	47 58 22	3508
	α Arietis E.	94 17 47	3133	92 50 16	3124	91 22 36	3116	89 54 46	3109
10	Mars W.	112 54 51	3191	114 21 23	3171	115 48 7	3161	117 15 2	3152
	Saturn W.	83 21 17	2965	84 52 14	2936	86 23 23	2946	87 54 44	2936
	Antares W.	65 20 23	3009	66 50 25	2996	68 20 40	2987	69 51 9	2977
	α Pegasi E.	41 20 54	3633	40 2 54	3609	38 45 33	3709	37 28 56	3768
	α Arietis E.	82 33 11	3088	81 4 22	3060	79 35 23	3062	78 6 14	3043
11	Saturn W.	95 34 36	2886	97 7 13	2876	98 40 3	2866	100 13 7	2856
	Antares W.	77 27 2	2920	78 58 55	2909	80 31 2	2898	82 3 23	2887
	α Arietis E.	70 38 2	3006	69 7 55	2997	67 37 39	2990	66 7 14	2984
	Aldebaran E.	102 52 9	2864	101 18 51	2844	99 45 20	2833	98 11 35	2823
12	Saturn W.	108 1 48	2801	109 36 14	2791	111 10 54	2781	112 45 47	2771
	Antares W.	89 48 39	2633	91 22 24	2623	92 56 22	2613	94 30 34	2603
	α Aquilæ W.	46 0 28	3711	47 17 3	3663	48 34 40	3690	49 53 15	3649
	α Arietis E.	58 33 16	2967	57 2 9	2958	55 30 57	2950	53 59 41	2946
	Aldebaran E.	90 19 24	2769	88 44 16	2760	87 8 54	2748	85 33 18	2738
13	Antares W.	102 24 52	2752	104 0 23	2743	105 36 6	2733	107 12 2	2726
	α Aquilæ W.	56 38 47	3345	58 2 6	3313	59 26 3	3293	60 50 36	3252
	α Arietis E.	46 23 1	2962	44 51 48	2936	43 20 42	2926	41 49 45	2974
	Aldebaran E.	77 31 47	2686	75 54 47	2675	74 17 33	2664	72 40 5	2656
14	α Aquilæ W.	68 1 24	3129	69 28 59	3106	70 56 59	3088	72 25 23	3070
	Fomalhaut W.	36 13 27	3097	37 30 17	3099	38 48 42	3028	40 8 35	3456
	Jupiter W.	33 18 12	2863	34 57 31	2872	36 37 4	2862	38 16 51	2862
	α Arietis E.	34 19 13	3073	32 50 29	3106	31 22 27	3149	29 55 15	3197
	Aldebaran E.	64 29 24	2806	62 50 36	2806	61 11 35	2867	59 32 22	2677
15	α Aquilæ W.	79 52 33	2904	81 22 53	2892	82 53 28	2870	84 24 18	2860
	Fomalhaut W.	47 6 1	3186	48 32 28	3143	49 59 46	3106	51 27 50	3071
	Jupiter W.	46 39 7	2806	48 20 12	2497	50 1 29	2499	51 42 58	2491
	Aldebaran E.	51 13 9	2634	49 32 43	2625	47 52 5	2617	46 11 16	2609
	Pollux E.	95 2 14	2612	93 23 36	2604	91 44 47	2606	90 5 46	2606
16	α Aquilæ W.	92 1 27	2920	93 33 21	2914	95 5 22	2909	96 37 29	2906
	Jupiter W.	60 13 10	2442	61 55 44	2435	63 38 29	2428	65 21 24	2421
	Fomalhaut W.	58 57 52	2631	60 29 32	2906	62 1 41	2907	63 34 16	2908
	Aldebaran E.	37 44 25	2471	36 2 31	2464	34 20 27	2467	32 38 13	2460
	Pollux E.	81 48 3	2692	80 8 2	2646	78 27 52	2640	76 47 34	2633
17	α Aquilæ W.	104 18 52	2801	105 51 9	2803	107 23 24	2807	108 55 34	2813

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
17	Jupiter W.	67° 4' 28"	2415	68° 47' 42"	2408	70° 31' 6"	2401	72° 14' 39"	2395
	Fomalhaut W.	65° 7' 16"	2819	66° 40' 40"	2833	68° 14' 25"	2817	69° 48' 31"	2802
	α Pegasi W.	50° 23' 7"	2909	51° 55' 15"	2880	53° 27' 59"	2856	55° 1' 16"	2831
	Aldebaran E.	30° 55' 50"	2443	29° 13' 17"	2437	27° 30' 35"	2431	25° 47' 44"	2424
	Pollux E.	75° 7' 7"	2928	73° 26' 33"	2923	71° 45' 52"	2919	70° 5' 5"	2914
	SUN E.	137° 0' 50"	2764	135° 25' 35"	2737	133° 50' 11"	2750	132° 14' 38"	2744
18	Jupiter W.	80° 54' 34"	2366	82° 38' 59"	2360	84° 23' 31"	2356	86° 8' 11"	2349
	Fomalhaut W.	77° 43' 27"	2742	79° 19' 11"	2732	80° 55' 9"	2728	82° 31' 18"	2716
	α Pegasi W.	62° 54' 40"	2735	64° 30' 33"	2720	66° 6' 46"	2706	67° 43' 18"	2692
	Pollux E.	61° 39' 44"	2497	59° 58' 27"	2496	58° 17' 8"	2494	56° 35' 47"	2494
	SUN E.	124° 14' 41"	2711	122° 38' 16"	2705	121° 1' 43"	2690	119° 25' 2"	2684
19	Jupiter W.	94° 53' 24"	2324	96° 38' 48"	2320	98° 24' 19"	2316	100° 9' 56"	2311
	Fomalhaut W.	90° 34' 26"	2665	92° 11' 26"	2661	93° 48' 32"	2678	95° 25' 42"	2675
	α Pegasi W.	75° 50' 4"	2638	77° 28' 7"	2630	79° 6' 21"	2622	80° 44' 46"	2616
	α Arietis W.	32° 27' 51"	2928	34° 1' 42"	2782	35° 36' 34"	2741	37° 12' 19"	2706
	Pollux E.	48° 9' 2"	2499	46° 27' 48"	2504	44° 46' 40"	2509	43° 5' 39"	2516
	SUN E.	111° 19' 46"	2666	109° 42' 21"	2662	108° 4' 50"	2656	106° 27' 11"	2652
20	Jupiter W.	108° 59' 36"	2290	110° 45' 50"	2287	112° 32' 9"	2283	114° 18' 34"	2279
	α Pegasi W.	88° 59' 6"	2585	90° 38' 20"	2583	92° 17' 39"	2579	93° 57' 3"	2577
	α Arietis W.	45° 21' 20"	2578	47° 0' 45"	2569	48° 40' 36"	2543	50° 20' 50"	2527
	Pollux E.	34° 43' 46"	2580	33° 4' 23"	2607	31° 25' 31"	2629	29° 47' 15"	2650
	SUN E.	98° 17' 22"	2629	96° 39' 6"	2624	95° 0' 44"	2620	93° 22' 16"	2616
21	α Pegasi W.	102° 14' 37"	2573	103° 54' 9"	2574	105° 33' 39"	2577	107° 13' 6"	2579
	α Arietis W.	58° 46' 51"	2467	60° 28' 51"	2458	62° 11' 4"	2449	63° 53' 29"	2441
	Aldebaran W.	24° 50' 39"	2287	26° 36' 57"	2284	28° 23' 20"	2281	30° 9' 47"	2279
	SUN E.	85° 8' 39"	2596	83° 29' 41"	2594	81° 50' 38"	2591	80° 11' 31"	2586
22	α Arietis W.	72° 28' 3"	2411	74° 11' 22"	2407	75° 54' 47"	2403	77° 38' 18"	2400
	Aldebaran W.	39° 3' 0"	2266	40° 49' 49"	2265	42° 36' 40"	2263	44° 23' 34"	2262
	SUN E.	71° 55' 1"	2576	70° 15' 33"	2574	68° 36' 3"	2573	66° 56' 31"	2572
23	α Arietis W.	86° 16' 47"	2391	88° 0' 35"	2390	89° 44' 24"	2390	91° 28' 13"	2390
	Aldebaran W.	53° 18' 28"	2258	55° 5' 29"	2249	56° 52' 31"	2256	58° 39' 32"	2256
	SUN E.	58° 38' 27"	2569	56° 58' 48"	2566	55° 19' 9"	2569	53° 39' 31"	2569
24	Aldebaran W.	67° 34' 23"	2265	69° 21' 14"	2267	71° 8' 2"	2269	72° 54' 47"	2272
	Pollux W.	25° 54' 21"	2684	27° 31' 22"	2640	29° 9' 23"	2608	30° 48' 14"	2573
	SUN E.	45° 21' 40"	2577	43° 42' 14"	2560	42° 2' 51"	2563	40° 23' 32"	2566
25	Aldebaran W.	81° 47' 17"	2291	83° 33' 29"	2296	85° 19' 34"	2302	87° 5' 31"	2307
	Pollux W.	39° 10' 44"	2486	40° 52' 17"	2478	42° 34' 1"	2473	44° 15' 54"	2466
	SUN E.	32° 8' 21"	2610	30° 29' 39"	2616	28° 51' 6"	2623	27° 12' 42"	2629
29	SUN W.	19° 4' 32"	2992	20° 35' 33"	2976	22° 6' 16"	2968	23° 36' 43"	3002
	Antares E.	43° 57' 27"	2746	42° 21' 48"	2769	40° 46' 39"	2792	39° 12' 1"	2817
	α Aquilæ E.	92° 54' 55"	3036	91° 25' 52"	3070	89° 57' 6"	3084	88° 28' 37"	3096
30	SUN W.	31° 4' 43"	3073	32° 33' 26"	3087	34° 1' 52"	3101	35° 30' 0"	3116
	Antares E.	31° 27' 42"	2972	29° 56' 54"	3012	28° 26' 56"	3054	26° 57' 50"	3105
	α Aquilæ E.	81° 10' 52"	3182	79° 44' 21"	3200	78° 18' 12"	3220	76° 52' 26"	3239
	Jupiter E.	110° 58' 20"	2698	109° 21' 38"	2713	107° 45' 15"	2726	106° 9' 10"	2740

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
17	Jupiter W.	73° 58' 20"	2389	75° 42' 11"	2383	77° 26' 11"	2377	79° 10' 18"	2371
	Fomalhaut W.	71 22 56	2788	72 57 39	2775	74 32 40	2763	76 7 57	2753
	α Pegasi W.	56 35 3	2810	58 9 18	2786	59 44 1	2769	61 19 9	2762
	Aldebaran E.	24 4 44	2418	22 21 35	2412	20 38 17	2405	18 54 50	2400
	Pollux E.	68 24 11	2510	66 43 12	2506	65 2 7	2503	63 20 58	2499
	SUN E.	130 38 56	2737	129 3 5	2731	127 27 6	2724	125 50 58	2717
18	Jupiter W.	87 52 59	2344	89 37 54	2339	91 22 57	2334	93 8 7	2329
	Fomalhaut W.	84 7 37	2708	85 44 6	2701	87 20 45	2695	88 57 32	2689
	α Pegasi W.	69 20 8	2680	70 57 15	2669	72 34 37	2657	74 12 14	2648
	Pollux E.	54 54 25	2493	53 13 2	2494	51 31 40	2485	49 50 20	2487
	SUN E.	117 48 14	2688	116 11 18	2683	114 34 15	2677	112 57 4	2672
19	Jupiter W.	101 55 40	2307	103 41 30	2302	105 27 26	2296	107 13 29	2294
	Fomalhaut W.	97 2 55	2673	98 40 11	2672	100 17 29	2672	101 54 47	2673
	α Pegasi W.	82 23 21	2608	84 2 5	2601	85 40 58	2596	87 19 59	2591
	α Arietis W.	38 48 51	2675	40 26 5	2646	42 3 57	2621	43 42 23	2599
	Pollux E.	41 24 48	2628	39 44 9	2634	38 3 43	2646	36 23 34	2651
	SUN E.	104 49 26	2646	103 11 34	2643	101 33 36	2636	99 55 32	2633
20	Jupiter W.	116 5 3	2276	117 51 38	2273	119 38 17	2270	121 25 1	2266
	α Pegasi W.	95 36 30	2674	97 16 0	2673	98 55 32	2672	100 35 5	2673
	α Arietis W.	52 1 26	2612	53 42 22	2600	55 23 35	2488	57 5 5	2477
	Pollux E.	28 9 42	2701	26 33 3	2750	24 57 30	2611	23 23 17	2687
	SUN E.	91 43 43	2612	90 5 5	2608	88 26 21	2604	86 47 32	2601
21	α Pegasi W.	108 52 30	2583	110 31 48	2588	112 11 0	2593	113 50 4	2600
	α Arietis W.	65 36 5	2434	67 18 51	2427	69 1 47	2422	70 44 51	2416
	Aldebaran W.	31 56 18	2276	33 42 53	2273	35 29 32	2271	37 16 14	2268
	SUN E.	78 32 20	2668	76 53 5	2663	75 13 47	2661	73 34 26	2678
22	α Arietis W.	79 21 53	2397	81 5 32	2394	82 49 15	2393	84 33 0	2391
	Aldebaran W.	46 10 30	2390	47 57 28	2390	49 44 27	2389	51 31 27	2386
	SUN E.	65 16 57	2670	63 37 21	2669	61 57 44	2669	60 18 6	2666
23	α Arietis W.	93 12 2	2391	94 55 49	2394	96 39 33	2396	98 23 14	2399
	Aldebaran W.	60 26 33	2269	62 13 33	2260	64 0 32	2261	65 47 29	2263
	SUN E.	51 59 53	2670	50 20 17	2671	48 40 42	2673	47 1 10	2674
24	Aldebaran W.	74 41 27	2276	76 28 2	2279	78 14 33	2283	80 0 58	2287
	Pollux W.	32 27 46	2648	34 7 53	2627	35 48 28	2611	37 29 26	2697
	SUN E.	38 44 18	2691	37 5 10	2694	35 26 7	2699	33 47 11	2694
25	Aldebaran W.	88 51 20	2313	90 37 0	2320	92 22 31	2326	94 7 52	2333
	Pollux W.	45 57 55	2462	47 40 1	2462	49 22 8	2461	51 4 16	2461
	SUN E.	25 34 27	2688	23 56 23	2646	22 18 31	2655	20 40 51	2656
29	SUN W.	25 6 53	3018	26 36 47	3030	28 6 23	3043	29 35 42	3056
	Antares E.	37 37 55	2646	36 4 25	2673	34 31 31	2603	32 59 16	2636
	α Aquilæ E.	87 0 25	3114	85 32 32	3129	84 4 58	3147	82 37 45	3163
30	SUN W.	36 57 51	3130	38 25 24	3144	39 52 40	3159	41 19 38	3173
	Antares E.	25 29 47	3164	24 2 55	3230	22 37 21	3304	21 13 14	3366
	α Aquilæ E.	75 27 3	3259	74 2 4	3281	72 37 30	3306	71 13 22	3326
	Jupiter E.	104 33 22	2753	102 57 53	2767	101 22 42	2780	99 47 48	2793

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
		^h ^m ^s	^s	S. [°] ['] ["]	["]	[°] ['] ["]				
Tues.	1	12 28 44.17	9.060	S. 3 6 19.9	58.32	16 1.42	64.35	10 14.04	0.797	
Wed.	2	12 32 21.69	9.072	3 29 38.1	58.23	16 1.70	64.39	10 33.01	0.785	
Thur.	3	12 35 59.50	9.084	3 52 54.1	58.12	16 1.98	64.44	10 51.70	0.772	
Fri.	4	12 39 37.63	9.097	4 16 7.4	58.00	16 2.27	64.49	11 10.08	0.758	
Sat.	5	12 43 16.09	9.111	4 39 17.5	57.86	16 2.56	64.54	11 28.12	0.744	
Sun.	6	12 46 54.89	9.126	5 2 24.1	57.70	16 2.84	64.60	11 45.83	0.729	
Mon.	7	12 50 34.05	9.142	5 25 26.8	57.53	16 3.12	64.66	12 3.17	0.714	
Tues.	8	12 54 13.61	9.158	5 48 25.2	57.35	16 3.40	64.72	12 20.11	0.697	
Wed.	9	12 57 53.59	9.176	6 11 19.0	57.15	16 3.68	64.78	12 36.64	0.680	
Thur.	10	13 1 34.00	9.195	6 34 7.9	56.94	16 4.96	64.85	12 52.74	0.661	
Fri.	11	13 5 14.85	9.214	6 56 51.5	56.71	16 4.24	64.92	13 8.40	0.642	
Sat.	12	13 8 56.19	9.234	7 19 29.5	56.47	16 4.52	64.99	13 23.57	0.622	
Sun.	13	13 12 38.02	9.255	7 42 1.5	56.21	16 4.79	65.07	13 38.25	0.601	
Mon.	14	13 16 20.37	9.278	8 4 27.1	55.94	16 5.07	65.15	13 52.42	0.579	
Tues.	15	13 20 3.26	9.301	8 26 45.9	55.65	16 5.34	65.23	14 6.04	0.556	
Wed.	16	13 23 46.72	9.325	8 48 57.6	55.34	16 5.61	65.31	14 19.09	0.532	
Thur.	17	13 27 30.78	9.350	9 11 1.9	55.02	16 5.88	65.40	14 31.55	0.507	
Fri.	18	13 31 15.45	9.376	9 32 58.4	54.68	16 6.15	65.49	14 43.40	0.481	
Sat.	19	13 35 0.74	9.402	9 54 46.5	54.33	16 6.41	65.58	14 54.63	0.454	
Sun.	20	13 38 46.67	9.429	10 16 25.9	53.96	16 6.68	65.67	15 5.22	0.427	
Mon.	21	13 42 33.26	9.456	10 37 56.4	53.58	16 6.94	65.77	15 15.16	0.399	
Tues.	22	13 46 20.54	9.485	10 59 17.7	53.18	16 7.20	65.86	15 24.42	0.371	
Wed.	23	13 50 8.51	9.514	11 20 29.2	52.77	16 7.46	65.96	15 32.98	0.342	
Thur.	24	13 53 57.17	9.543	11 41 30.5	52.34	16 7.72	66.06	15 40.84	0.313	
Fri.	25	13 57 46.55	9.573	12 2 21.2	51.89	16 7.98	66.16	15 48.00	0.283	
Sat.	26	14 1 36.66	9.604	12 23 0.8	51.42	16 8.24	66.26	15 54.43	0.252	
Sun.	27	14 5 27.51	9.635	12 43 29.1	50.93	16 8.50	66.37	16 0.12	0.221	
Mon.	28	14 9 19.10	9.666	13 3 45.6	50.42	16 8.76	66.48	16 5.06	0.190	
Tues.	29	14 13 11.45	9.698	13 23 49.8	49.90	16 9.02	66.59	16 9.25	0.158	
Wed.	30	14 17 4.56	9.730	13 43 41.2	49.36	16 9.28	66.70	16 12.68	0.126	
Thur.	31	14 20 58.43	9.762	14 3 19.5	48.81	16 9.53	66.81	16 15.35	0.094	
Fri.	32	14 24 53.09	9.794	S.14 22 44.4	48.24	16 9.79	66.92	16 17.25	0.068	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Tues.	1	12 ^h 28 ^m 45.72 ^s	9.060	S. 3° 6' 29".8	58.32	10 14.17	0.797	12 38 59.89
Wed.	2	12 32 23.29	9.072	3 29 48.4	58.23	10 33.15	0.785	12 42 56.44
Thur.	3	12 36 1.15	9.084	3 53 4.6	58.12	10 51.84	0.772	12 46 52.99
Fri.	4	12 39 39.32	9.097	4 16 18.1	58.00	11 10.22	0.758	12 50 49.54
Sat.	5	12 43 17.83	9.111	4 39 28.5	57.86	11 28.26	0.744	12 54 46.09
Sun.	6	12 46 56.68	9.126	5 2 35.4	57.70	11 45.97	0.729	12 58 42.65
Mon.	7	12 50 35.89	9.142	5 25 38.3	57.53	12 3.31	0.714	13 2 39.20
Tues.	8	12 54 15.50	9.158	5 48 36.9	57.35	12 20.25	0.697	13 6 35.75
Wed.	9	12 57 55.52	9.176	6 11 31.0	57.15	12 36.78	0.680	13 10 32.30
Thur.	10	13 1 35.97	9.195	6 34 20.2	56.94	12 52.88	0.661	13 14 28.85
Fri.	11	13 5 16.87	9.214	6 57 4.0	56.71	13 8.54	0.642	13 18 25.41
Sat.	12	13 8 58.25	9.234	7 19 42.2	56.47	13 23.71	0.622	13 22 21.96
Sun.	13	13 12 40.12	9.255	7 42 14.3	56.21	13 38.39	0.601	13 26 18.51
Mon.	14	13 16 22.51	9.278	8 4 40.0	55.94	13 52.55	0.579	13 30 15.06
Tues.	15	13 20 5.45	9.301	8 26 59.0	55.65	14 6.17	0.556	13 34 11.62
Wed.	16	13 23 48.95	9.325	8 49 10.9	55.34	14 19.22	0.532	13 38 8.17
Thur.	17	13 27 33.04	9.350	9 11 15.3	55.02	14 31.68	0.507	13 42 4.72
Fri.	18	13 31 17.75	9.376	9 33 11.8	54.68	14 43.52	0.481	13 46 1.27
Sat.	19	13 35 3.08	9.402	9 55 0.0	54.33	14 54.75	0.454	13 49 57.83
Sun.	20	13 38 49.05	9.429	10 16 39.5	53.96	15 5.33	0.427	13 53 54.38
Mon.	21	13 42 35.67	9.456	10 38 10.1	53.58	15 15.26	0.399	13 57 50.93
Tues.	22	13 46 22.98	9.485	10 59 31.4	53.18	15 24.51	0.371	14 1 47.49
Wed.	23	13 50 10.98	9.514	11 20 42.9	52.77	15 33.06	0.342	14 5 44.04
Thur.	24	13 53 59.67	9.543	11 41 44.2	52.34	15 40.92	0.313	14 9 40.59
Fri.	25	13 57 49.07	9.573	12 2 34.9	51.89	15 48.07	0.283	14 13 37.14
Sat.	26	14 1 39.20	9.604	12 23 14.5	51.42	15 54.50	0.252	14 17 33.70
Sun.	27	14 5 30.07	9.635	12 43 42.7	50.93	16 0.18	0.221	14 21 30.25
Mon.	28	14 9 21.69	9.666	13 3 59.1	50.42	16 5.11	0.190	14 25 26.80
Tues.	29	14 13 14.06	9.698	13 24 3.2	49.90	16 9.30	0.158	14 29 23.36
Wed.	30	14 17 7.19	9.730	13 43 54.5	49.36	16 12.72	0.126	14 33 19.91
Thur.	31	14 21 1.08	9.762	14 3 32.7	48.81	16 15.39	0.094	14 37 16.47
Fri.	32	14 24 55.75	9.794	S. 14 22 57.5	48.24	16 17.27	0.062	14 41 13.02

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	274	187° 50' 9.0	49' 36.8	147.70	+0.41	0.0002624	52.8	11 19 8.55	
2	275	188 49 14.7	48 42.5	147.78	0.46	.0001355	53.0	11 15 12.65	
3	276	189 48 22.2	47 49.9	147.85	0.47	0.0000081	53.2	11 11 16.75	
4	277	190 47 31.7	46 59.3	147.92	0.45	9.9998802	53.3	11 7 20.84	
5	278	191 46 42.8	46 10.3	148.00	0.40	.9997522	53.4	11 3 24.93	
6	279	192 45 55.6	45 23.0	148.07	0.32	.9996241	53.4	10 59 29.02	
7	280	193 45 10.2	44 37.6	148.15	0.22	.9994961	53.3	10 55 33.11	
8	281	194 44 26.7	43 54.0	148.22	+0.11	.9993685	53.1	10 51 37.21	
9	282	195 43 44.9	43 12.1	148.30	-0.02	.9992413	52.9	10 47 41.30	
10	283	196 43 4.9	42 32.0	148.37	0.16	.9991146	52.6	10 43 45.39	
11	284	197 42 26.8	41 53.8	148.45	0.29	.9989886	52.3	10 39 49.48	
12	285	198 41 50.6	41 17.6	148.53	0.42	.9988635	52.0	10 35 53.57	
13	286	199 41 16.4	40 43.3	148.62	0.53	.9987392	51.6	10 31 57.66	
14	287	200 40 44.2	40 11.0	148.70	0.62	.9986158	51.2	10 28 1.76	
15	288	201 40 14.2	39 40.9	148.79	0.68	.9984934	50.8	10 24 5.85	
16	289	202 39 46.4	39 13.0	148.88	0.71	.9983719	50.4	10 20 9.95	
17	290	203 39 20.9	38 47.4	148.98	0.71	.9982513	50.1	10 16 14.04	
18	291	204 38 57.5	38 23.9	149.07	0.68	.9981315	49.8	10 12 18.14	
19	292	205 38 36.3	38 2.6	149.17	0.62	.9980124	49.5	10 8 22.24	
20	293	206 38 17.4	37 43.6	149.26	0.54	.9978939	49.2	10 4 26.33	
21	294	207 38 0.9	37 27.0	149.36	0.44	.9977760	49.0	10 0 30.42	
22	295	208 37 46.6	37 12.6	149.45	0.32	.9976586	48.8	9 56 34.51	
23	296	209 37 34.5	37 0.4	149.54	0.19	.9975416	48.7	9 52 38.60	
24	297	210 37 24.6	36 50.4	149.63	-0.05	.9974249	48.5	9 48 42.69	
25	298	211 37 16.9	36 42.6	149.72	+0.08	.9973085	48.4	9 44 46.78	
26	299	212 37 11.3	36 36.9	149.81	0.19	.9971924	48.3	9 40 50.88	
27	300	213 37 7.7	36 33.2	149.89	0.28	.9970765	48.2	9 36 54.97	
28	301	214 37 6.1	36 31.5	149.97	0.36	.9969609	48.1	9 32 59.06	
29	302	215 37 6.4	36 31.7	150.05	0.41	.9968455	48.0	9 29 3.16	
30	303	216 37 8.5	36 33.7	150.13	0.43	.9967304	47.9	9 25 7.25	
31	304	217 37 12.4	36 37.5	150.20	0.42	.9966156	47.7	9 21 11.34	
32	305	218 37 17.9	36 42.9	150.27	+0.38	9.9965013	47.4	9 17 15.43	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
							h m	m	
1	15 11.9	15 7.1	55 40.1	-1.53	55 22.5	-1.41	2 43.3	1.99	3.5
2	15 2.7	14 58.8	55 6.3	1.27	54 52.0	1.11	3 31.0	1.99	4.5
3	14 55.5	14 52.8	54 39.7	0.93	54 29.7	0.73	4 18.8	1.99	5.5
4	14 50.7	14 49.3	54 22.1	0.53	54 17.0	-0.32	5 6.5	1.99	6.5
5	14 48.6	14 48.6	54 14.5	-0.10	54 14.6	+0.12	5 54.0	1.97	7.5
6	14 49.4	14 50.8	54 17.4	+0.34	54 22.7	0.55	6 41.2	1.96	8.5
7	14 53.0	14 55.8	54 30.5	0.75	54 40.8	0.95	7 28.1	1.94	9.5
8	14 59.2	15 3.1	54 53.2	1.13	55 7.7	1.29	8 14.6	1.93	10.5
9	15 7.5	15 12.4	55 24.1	1.42	55 41.9	1.54	9 0.9	1.93	11.5
10	15 17.6	15 23.0	56 1.0	1.63	56 21.0	1.69	9 47.5	1.95	12.5
11	15 28.6	15 34.2	56 41.4	1.71	57 2.0	1.70	10 34.7	1.98	13.5
12	15 39.8	15 45.1	57 22.3	1.67	57 42.0	1.60	11 23.0	2.04	14.5
13	15 50.2	15 54.9	58 0.7	1.50	58 18.0	1.38	12 12.9	2.12	15.5
14	15 59.2	16 3.0	58 33.8	1.24	58 47.7	1.07	13 4.9	2.22	16.5
15	16 6.2	16 8.9	58 59.5	0.90	59 9.3	0.72	13 59.2	2.31	17.5
16	16 10.9	16 12.4	59 16.8	0.54	59 22.2	0.37	14 55.7	2.39	18.5
17	16 13.3	16 13.7	59 25.6	+0.20	59 26.9	+0.04	15 53.6	2.43	19.5
18	16 13.6	16 13.0	59 26.5	-0.10	59 24.5	-0.23	16 52.0	2.43	20.5
19	16 12.1	16 10.8	59 21.0	0.35	59 16.2	0.45	17 49.8	2.38	21.5
20	16 9.1	16 7.2	59 10.2	0.54	59 3.3	0.62	18 46.0	2.30	22.5
21	16 6.1	16 2.7	58 55.4	0.69	58 46.7	0.76	19 40.1	2.21	23.5
22	16 0.1	15 57.3	58 37.1	0.83	58 26.7	0.90	20 32.1	2.13	24.5
23	15 54.2	15 51.0	58 15.5	0.97	58 3.5	1.03	21 22.3	2.06	25.5
24	15 47.5	15 43.8	57 50.7	1.09	57 37.2	1.16	22 11.2	2.02	26.5
25	15 39.9	15 35.9	57 22.9	1.21	57 8.0	1.26	22 59.2	1.99	27.5
26	15 31.7	15 27.4	56 52.6	1.30	56 36.8	1.33	23 47.0	1.99	28.5
27	15 23.0	15 18.6	56 20.7	1.34	56 4.6	1.33	δ		29.5
28	15 14.3	15 10.0	55 48.7	1.31	55 33.2	1.27	0 34.7	1.99	1.0
29	15 6.0	15 2.1	55 18.3	1.21	55 4.2	1.12	1 22.7	2.00	2.0
30	14 58.6	14 55.5	54 51.3	1.02	54 39.7	0.90	2 10.8	2.01	3.0
31	14 52.8	14 50.5	54 29.7	0.76	54 21.6	0.59	2 59.0	2.00	4.0
32	14 48.9	14 47.8	54 15.5	-0.42	54 11.5	-0.23	3 46.9	1.98	5.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 1.					THURSDAY 3.				
0	15 17 0.60	2.0913	S. 13 13 54.1	7.066	0	16 57 22.84	2.0906	S. 17 24 46.9	3.296
1	15 19 6.08	2.0913	13 20 55.3	6.984	1	16 59 28.28	2.0907	17 28 2.1	3.212
2	15 21 11.56	2.0912	13 27 52.2	6.913	2	17 1 33.72	2.0906	17 31 12.3	3.128
3	15 23 17.03	2.0912	13 34 44.8	6.841	3	17 3 39.15	2.0905	17 34 17.4	3.044
4	15 25 22.50	2.0911	13 41 33.1	6.769	4	17 5 44.58	2.0904	17 37 17.5	2.960
5	15 27 27.97	2.0911	13 48 17.0	6.696	5	17 7 50.00	2.0903	17 40 12.5	2.875
6	15 29 33.43	2.0910	13 54 56.6	6.623	6	17 9 55.42	2.0902	17 43 2.5	2.791
7	15 31 38.89	2.0910	14 1 31.8	6.550	7	17 12 0.83	2.0901	17 45 47.4	2.706
8	15 33 44.35	2.0910	14 8 2.6	6.476	8	17 14 6.23	2.0900	17 48 27.2	2.622
9	15 35 49.81	2.0910	14 14 28.9	6.402	9	17 16 11.62	2.0899	17 51 1.9	2.537
10	15 37 55.27	2.0909	14 20 50.8	6.328	10	17 18 17.01	2.0897	17 53 31.6	2.453
11	15 40 0.73	2.0909	14 27 8.2	6.253	11	17 20 22.39	2.0896	17 55 56.2	2.368
12	15 42 6.18	2.0909	14 33 21.2	6.178	12	17 22 27.76	2.0895	17 58 15.7	2.283
13	15 44 11.64	2.0910	14 39 29.6	6.103	13	17 24 33.12	2.0894	18 0 30.1	2.198
14	15 46 17.10	2.0909	14 45 33.5	6.027	14	17 26 38.47	2.0892	18 2 39.4	2.113
15	15 48 22.56	2.0909	14 51 32.8	5.951	15	17 28 43.81	2.0889	18 4 43.6	2.028
16	15 50 28.01	2.0909	14 57 27.6	5.874	16	17 30 49.14	2.0888	18 6 42.7	1.943
17	15 52 33.46	2.0909	15 3 17.7	5.797	17	17 32 54.46	2.0886	18 8 36.7	1.858
18	15 54 38.92	2.0910	15 9 3.3	5.720	18	17 34 59.77	2.0884	18 10 25.6	1.773
19	15 56 44.38	2.0910	15 14 44.3	5.643	19	17 37 5.06	2.0881	18 12 9.4	1.687
20	15 58 49.84	2.0910	15 20 20.6	5.566	20	17 39 10.34	2.0879	18 13 48.0	1.602
21	16 0 55.30	2.0910	15 25 52.3	5.488	21	17 41 15.61	2.0877	18 15 21.5	1.516
22	16 3 0.76	2.0911	15 31 19.2	5.410	22	17 43 20.86	2.0875	18 16 49.9	1.431
23	16 5 6.22	2.0911	S. 15 36 41.5	5.331	23	17 45 26.10	2.0873	S. 18 18 13.2	1.346
WEDNESDAY 2.					FRIDAY 4.				
0	16 7 11.69	2.0911	S. 15 41 59.0	5.252	0	17 47 31.32	2.0870	S. 18 19 31.3	1.260
1	16 9 17.15	2.0911	15 47 11.8	5.173	1	17 49 36.53	2.0867	18 20 44.3	1.174
2	16 11 22.62	2.0912	15 52 19.8	5.094	2	17 51 41.72	2.0865	18 21 52.2	1.089
3	16 13 28.09	2.0912	15 57 23.1	5.016	3	17 53 46.90	2.0862	18 22 54.9	1.003
4	16 15 33.56	2.0912	16 2 21.6	4.936	4	17 55 52.06	2.0859	18 23 52.5	0.918
5	16 17 39.03	2.0912	16 7 15.3	4.856	5	17 57 57.20	2.0856	18 24 45.0	0.832
6	16 19 44.50	2.0912	16 12 4.2	4.774	6	18 0 2.32	2.0852	18 25 32.3	0.747
7	16 21 49.97	2.0912	16 16 48.2	4.693	7	18 2 7.42	2.0849	18 26 14.5	0.661
8	16 23 55.44	2.0912	16 21 27.3	4.613	8	18 4 12.51	2.0846	18 26 51.6	0.576
9	16 26 0.91	2.0912	16 26 1.6	4.537	9	18 6 17.58	2.0843	18 27 23.6	0.490
10	16 28 6.38	2.0912	16 30 31.1	4.459	10	18 8 22.62	2.0840	18 27 50.4	0.405
11	16 30 11.85	2.0912	16 34 55.7	4.371	11	18 10 27.65	2.0836	18 28 12.1	0.319
12	16 32 17.32	2.0912	16 39 15.6	4.280	12	18 12 32.65	2.0832	18 28 28.7	0.234
13	16 34 22.79	2.0912	16 43 30.5	4.206	13	18 14 37.63	2.0828	18 28 40.2	0.148
14	16 36 28.26	2.0912	16 47 40.4	4.126	14	18 16 42.59	2.0824	18 28 46.5	0.063
15	16 38 33.73	2.0911	16 51 45.4	4.043	15	18 18 47.52	2.0820	18 28 47.8	0.022
16	16 40 39.19	2.0911	16 55 45.4	3.961	16	18 20 52.43	2.0817	18 28 43.9	0.107
17	16 42 44.66	2.0911	16 59 40.5	3.878	17	18 22 57.32	2.0813	18 28 34.9	0.193
18	16 44 50.12	2.0911	17 3 30.6	3.796	18	18 25 2.18	2.0809	18 28 20.8	0.278
19	16 46 55.58	2.0910	17 7 15.8	3.712	19	18 27 7.02	2.0804	18 28 1.5	0.363
20	16 49 1.04	2.0910	17 10 56.0	3.629	20	18 29 11.83	2.0800	18 27 37.2	0.448
21	16 51 6.50	2.0909	17 14 31.2	3.546	21	18 31 16.62	2.0796	18 27 7.7	0.533
22	16 53 11.95	2.0909	17 18 1.4	3.463	22	18 33 21.38	2.0792	18 26 33.2	0.618
23	16 55 17.40	2.0906	17 21 26.6	3.379	23	18 35 26.11	2.0787	18 25 53.6	0.703
24	16 57 22.84	2.0906	S. 17 24 46.9	3.296	24	18 37 30.82	2.0783	S. 18 25 8.9	0.788

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 5.					MONDAY 7.				
0	18 37 30.82	2.0783	S. 18° 25' 8.9"	0.788	0	20 16 38.29	2.0611	S. 16° 12' 13.6"	4.684
1	18 39 35.50	2.0778	18 24 19.1	0.872	1	20 18 41.34	2.0606	16 7 30.3	4.760
2	18 41 40.15	2.0773	18 23 24.3	0.957	2	20 20 44.36	2.0600	16 2 42.4	4.836
3	18 43 44.77	2.0768	18 22 24.4	1.041	3	20 22 47.34	2.0494	15 57 50.0	4.912
4	18 45 49.37	2.0763	18 21 19.4	1.126	4	20 24 50.29	2.0488	15 52 53.0	4.987
5	18 47 53.94	2.0758	18 20 9.4	1.209	5	20 26 53.21	2.0483	15 47 51.5	5.062
6	18 49 58.47	2.0753	18 18 54.3	1.293	6	20 28 56.09	2.0478	15 42 45.6	5.137
7	18 52 2.97	2.0748	18 17 34.2	1.377	7	20 30 58.94	2.0473	15 37 35.1	5.212
8	18 54 7.44	2.0743	18 16 9.0	1.461	8	20 33 1.76	2.0468	15 32 20.2	5.286
9	18 56 11.88	2.0738	18 14 38.8	1.545	9	20 35 4.55	2.0463	15 27 0.8	5.360
10	18 58 16.29	2.0733	18 13 3.6	1.628	10	20 37 7.31	2.0458	15 21 37.0	5.434
11	19 0 20.67	2.0727	18 11 23.4	1.712	11	20 39 10.04	2.0453	15 16 8.8	5.507
12	19 2 25.01	2.0722	18 9 38.1	1.796	12	20 41 12.74	2.0448	15 10 36.2	5.580
13	19 4 29.32	2.0716	18 7 47.8	1.879	13	20 43 15.41	2.0443	15 4 59.2	5.653
14	19 6 33.60	2.0711	18 5 52.6	1.963	14	20 45 18.06	2.0438	14 59 17.9	5.726
15	19 8 37.85	2.0706	18 3 52.3	2.046	15	20 47 20.67	2.0433	14 53 32.2	5.797
16	19 10 42.06	2.0699	18 1 47.1	2.129	16	20 49 23.26	2.0429	14 47 42.3	5.869
17	19 12 46.24	2.0693	17 59 36.9	2.211	17	20 51 25.82	2.0425	14 41 48.0	5.940
18	19 14 50.38	2.0688	17 57 21.8	2.294	18	20 53 28.36	2.0420	14 35 49.5	6.011
19	19 16 54.49	2.0683	17 55 1.7	2.377	19	20 55 30.87	2.0416	14 29 46.8	6.081
20	19 18 58.57	2.0677	17 52 36.6	2.459	20	20 57 33.35	2.0412	14 23 39.8	6.152
21	19 21 2.61	2.0671	17 50 6.6	2.541	21	20 59 35.81	2.0408	14 17 28.6	6.223
22	19 23 6.62	2.0665	17 47 31.7	2.623	22	21 1 38.25	2.0404	14 11 13.2	6.291
23	19 25 10.59	2.0659	S. 17° 44' 51.9"	2.704	23	21 3 40.67	2.0400	S. 14° 4' 53.7"	6.360
SUNDAY 6.					TUESDAY 8.				
0	19 27 14.52	2.0653	S. 17° 42' 7.2"	2.786	0	21 5 43.06	2.0396	S. 13° 58' 30.0"	6.429
1	19 29 18.42	2.0648	17 39 17.6	2.867	1	21 7 45.43	2.0393	13 52 2.2	6.498
2	19 31 22.29	2.0643	17 36 23.1	2.948	2	21 9 47.78	2.0390	13 45 30.2	6.566
3	19 33 26.12	2.0638	17 33 23.7	3.030	3	21 11 50.11	2.0388	13 38 54.2	6.634
4	19 35 29.91	2.0633	17 30 19.5	3.111	4	21 13 52.43	2.0385	13 32 14.1	6.702
5	19 37 33.67	2.0628	17 27 10.4	3.192	5	21 15 54.73	2.0382	13 25 30.0	6.769
6	19 39 37.39	2.0618	17 23 56.5	3.273	6	21 17 57.01	2.0379	13 18 41.8	6.836
7	19 41 41.08	2.0612	17 20 37.7	3.353	7	21 19 59.27	2.0376	13 11 49.6	6.903
8	19 43 44.73	2.0606	17 17 14.2	3.433	8	21 22 1.52	2.0374	13 4 53.5	6.969
9	19 45 48.35	2.0600	17 13 45.8	3.511	9	21 24 3.76	2.0372	12 57 53.4	7.034
10	19 47 51.93	2.0594	17 10 12.7	3.591	10	21 26 5.98	2.0370	12 50 49.4	7.100
11	19 49 55.47	2.0588	17 6 34.8	3.670	11	21 28 8.19	2.0368	12 43 41.4	7.166
12	19 51 58.98	2.0582	17 2 52.2	3.749	12	21 30 10.39	2.0366	12 36 29.6	7.232
13	19 54 2.45	2.0576	16 59 4.8	3.829	13	21 32 12.58	2.0364	12 29 14.0	7.298
14	19 56 5.89	2.0570	16 55 12.7	3.908	14	21 34 14.76	2.0363	12 21 54.5	7.367
15	19 58 9.29	2.0563	16 51 15.8	3.987	15	21 36 16.93	2.0362	12 14 31.2	7.430
16	20 0 12.65	2.0557	16 47 14.2	4.066	16	21 38 19.10	2.0361	12 7 4.1	7.483
17	20 2 15.98	2.0552	16 43 7.9	4.144	17	21 40 21.26	2.0360	11 59 33.3	7.545
18	20 4 19.27	2.0546	16 38 56.9	4.223	18	21 42 23.42	2.0360	11 51 58.7	7.607
19	20 6 22.53	2.0540	16 34 41.3	4.299	19	21 44 25.58	2.0359	11 44 20.5	7.668
20	20 8 25.75	2.0534	16 30 21.0	4.377	20	21 46 27.73	2.0359	11 36 38.6	7.729
21	20 10 28.94	2.0528	16 25 56.1	4.454	21	21 48 29.88	2.0358	11 28 53.1	7.789
22	20 12 32.09	2.0523	16 21 26.5	4.531	22	21 50 32.03	2.0358	11 21 3.9	7.849
23	20 14 35.21	2.0517	16 16 52.3	4.608	23	21 52 34.18	2.0359	11 13 11.2	7.908
24	20 16 38.29	2.0511	S. 16° 12' 13.6"	4.684	24	21 54 36.34	2.0360	S. 11° 5' 14.9"	7.967

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 9.					FRIDAY 11.				
0	^h 21 ^m 54 ^s 36.34	2.0860	S. 11° 5' 14.9	7.987	0	^h 23 ^m 32 ^s 52.24	2.0899	S. 3° 44' 54.4	10.144
1	21 56 38.50	2.0361	10 57 15.1	8.026	1	23 34 56.44	2.0791	3 34 44.9	10.173
2	21 58 40.67	2.0862	10 49 11.7	8.064	2	23 37 0.72	2.0729	3 24 33.7	10.201
3	22 0 42.84	2.0363	10 41 4.9	8.143	3	23 39 5.09	2.0737	3 14 20.8	10.228
4	22 2 45.02	2.0864	10 32 54.7	8.200	4	23 41 9.56	2.0739	3 4 6.3	10.266
5	22 4 47.21	2.0366	10 24 41.0	8.267	5	23 43 14.12	2.0768	2 53 50.2	10.291
6	22 6 49.41	2.0868	10 16 23.9	8.313	6	23 45 18.77	2.0733	2 43 32.5	10.306
7	22 8 51.62	2.0370	10 8 3.5	8.368	7	23 47 23.52	2.0769	2 33 13.4	10.331
8	22 10 53.85	2.0872	9 59 39.7	8.423	8	23 49 28.36	2.0816	2 22 52.8	10.366
9	22 12 56.09	2.0374	9 51 12.7	8.478	9	23 51 33.31	2.0833	2 12 30.9	10.377
10	22 14 58.34	2.0877	9 42 42.3	8.533	10	23 53 38.36	2.0860	2 2 7.6	10.399
11	22 17 0.61	2.0381	9 34 8.8	8.588	11	23 55 43.51	2.0868	1 51 43.0	10.429
12	22 19 2.91	2.0884	9 25 32.0	8.639	12	23 57 48.77	2.0886	1 41 17.2	10.446
13	22 21 5.22	2.0388	9 16 52.1	8.693	13	23 59 54.14	2.0904	1 30 50.2	10.460
14	22 23 7.56	2.0893	9 8 9.0	8.744	14	0 1 59.62	2.0923	1 20 22.1	10.477
15	22 25 9.92	2.0396	8 59 22.8	8.796	15	0 4 5.21	2.0943	1 9 53.0	10.494
16	22 27 12.31	2.0400	8 50 33.6	8.846	16	0 6 10.92	2.0961	0 59 22.8	10.511
17	22 29 14.72	2.0404	8 41 41.3	8.896	17	0 8 16.75	2.0981	0 48 51.7	10.527
18	22 31 17.16	2.0409	8 32 46.1	8.946	18	0 10 22.69	2.1001	0 38 19.6	10.543
19	22 33 19.63	2.0416	8 23 47.9	8.996	19	0 12 28.75	2.1021	0 27 46.7	10.558
20	22 35 22.14	2.0420	8 14 46.7	9.044	20	0 14 34.94	2.1043	0 17 13.0	10.568
21	22 37 24.68	2.0426	8 5 42.6	9.093	21	0 16 41.25	2.1063	S. 0 6 38.5	10.580
22	22 39 27.25	2.0433	7 56 35.7	9.139	22	0 18 47.69	2.1084	N. 0 3 56.6	10.591
23	22 41 29.86	2.0438	S. 7 47 25.9	9.186	23	0 20 54.26	2.1106	N. 0 14 32.4	10.601
THURSDAY 10.					SATURDAY 12.				
0	22 43 32.51	2.0445	S. 7 38 13.4	9.233	0	0 23 0.96	2.1136	N. 0 25 8.7	10.611
1	22 45 35.20	2.0452	7 28 58.1	9.278	1	0 25 7.79	2.1156	0 35 45.6	10.629
2	22 47 37.93	2.0459	7 19 40.1	9.323	2	0 27 14.76	2.1179	0 46 23.0	10.647
3	22 49 40.70	2.0466	7 10 19.4	9.368	3	0 29 21.86	2.1194	0 57 0.8	10.663
4	22 51 43.52	2.0474	7 0 56.0	9.411	4	0 31 29.10	2.1218	1 7 38.9	10.680
5	22 53 46.38	2.0482	6 51 30.0	9.454	5	0 33 36.48	2.1243	1 18 17.3	10.693
6	22 55 49.30	2.0490	6 42 1.5	9.497	6	0 35 44.00	2.1268	1 28 56.0	10.698
7	22 57 52.27	2.0499	6 32 30.4	9.539	7	0 37 51.67	2.1291	1 39 34.9	10.699
8	22 59 55.29	2.0508	6 22 56.8	9.580	8	0 39 59.49	2.1316	1 50 13.9	10.691
9	23 1 58.36	2.0517	6 13 20.7	9.621	9	0 42 7.43	2.1340	2 0 53.0	10.682
10	23 4 1.49	2.0527	6 3 42.3	9.661	10	0 44 15.57	2.1366	2 11 32.1	10.681
11	23 6 4.68	2.0537	5 54 1.5	9.699	11	0 46 23.84	2.1391	2 22 11.1	10.669
12	23 8 7.93	2.0547	5 44 18.3	9.737	12	0 48 32.27	2.1417	2 32 50.0	10.666
13	23 10 11.24	2.0557	5 34 32.9	9.776	13	0 50 40.85	2.1443	2 43 28.7	10.663
14	23 12 14.61	2.0567	5 24 45.2	9.813	14	0 52 49.59	2.1470	2 54 7.2	10.639
15	23 14 18.05	2.0578	5 14 55.3	9.849	15	0 54 58.49	2.1496	3 4 45.4	10.633
16	23 16 21.55	2.0590	5 5 3.2	9.884	16	0 57 7.56	2.1523	3 15 23.2	10.606
17	23 18 25.12	2.0602	4 55 9.0	9.920	17	0 59 16.79	2.1549	3 26 0.6	10.610
18	23 20 28.77	2.0614	4 45 12.8	9.954	18	1 1 26.18	2.1580	3 36 37.5	10.610
19	23 22 32.49	2.0626	4 35 14.5	9.988	19	1 3 35.74	2.1608	3 47 13.8	10.600
20	23 24 36.28	2.0639	4 25 14.3	10.020	20	1 5 45.47	2.1634	3 57 49.5	10.569
21	23 26 40.15	2.0652	4 15 12.1	10.052	21	1 7 55.37	2.1664	4 8 24.5	10.577
22	23 28 44.10	2.0665	4 5 8.1	10.083	22	1 10 5.44	2.1693	4 18 58.8	10.584
23	23 30 48.13	2.0678	3 55 2.2	10.114	23	1 12 15.69	2.1723	4 29 32.2	10.560
24	23 32 52.24	2.0693	S. 3 44 54.4	10.144	24	1 14 26.12	2.1753	N. 4 40 4.8	10.596

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 13.					TUESDAY 15.				
0	1 14 26.12	2.1783	N. 4 40 4.8	10.585	0	3 2 39.97	2.3306	N. 12 26 38.7	6.487
1	1 16 36.72	2.1783	4 50 36.4	10.519	1	3 5 0.45	2.3421	12 35 3.9	6.385
2	1 18 47.51	2.1813	5 1 7.1	10.502	2	3 7 21.14	2.3407	12 43 24.8	6.312
3	1 20 58.48	2.1848	5 11 36.7	10.483	3	3 9 42.05	2.3503	12 51 41.3	6.288
4	1 23 9.63	2.1878	5 22 5.1	10.464	4	3 12 3.17	2.3638	12 59 53.3	6.163
5	1 25 20.96	2.1904	5 32 32.3	10.443	5	3 14 24.50	2.3673	13 8 0.8	6.086
6	1 27 32.48	2.1936	5 42 58.2	10.421	6	3 16 46.05	2.3698	13 16 3.6	6.008
7	1 29 44.18	2.1967	5 53 22.8	10.398	7	3 19 7.80	2.3643	13 24 1.7	7.929
8	1 31 56.08	2.1999	6 3 46.0	10.374	8	3 21 29.77	2.3678	13 31 55.1	7.849
9	1 34 8.17	2.2031	6 14 7.7	10.349	9	3 23 51.95	2.3713	13 39 43.6	7.769
10	1 36 20.45	2.2063	6 24 27.9	10.323	10	3 26 14.33	2.3748	13 47 27.3	7.686
11	1 38 32.92	2.2096	6 34 46.4	10.296	11	3 28 36.92	2.3783	13 55 6.1	7.603
12	1 40 45.59	2.2128	6 45 3.3	10.268	12	3 30 59.72	2.3817	14 2 39.8	7.519
13	1 42 58.46	2.2161	6 55 18.4	10.237	13	3 33 22.72	2.3851	14 10 8.4	7.434
14	1 45 11.52	2.2194	7 5 31.7	10.206	14	3 35 45.93	2.3886	14 17 31.9	7.348
15	1 47 24.78	2.2227	7 15 43.1	10.174	15	3 38 9.33	2.3918	14 24 50.2	7.261
16	1 49 38.24	2.2260	7 25 52.6	10.141	16	3 40 32.94	2.3951	14 32 3.3	7.178
17	1 51 51.90	2.2294	7 36 0.0	10.108	17	3 42 56.75	2.3984	14 39 11.0	7.093
18	1 54 5.77	2.2328	7 46 5.3	10.070	18	3 45 20.75	2.4016	14 46 13.3	6.998
19	1 56 19.84	2.2362	7 56 8.4	10.033	19	3 47 44.94	2.4048	14 53 10.1	6.902
20	1 58 34.11	2.2396	8 6 9.3	9.996	20	3 50 9.33	2.4081	15 0 1.5	6.810
21	2 0 48.59	2.2430	8 16 7.9	9.957	21	3 52 33.91	2.4113	15 6 47.3	6.716
22	2 3 3.27	2.2465	8 26 4.1	9.917	22	3 54 58.68	2.4144	15 13 27.4	6.622
23	2 5 18.16	2.2500	N. 8 35 57.9	9.876	23	3 57 23.64	2.4176	N. 15 20 1.9	6.527
MONDAY 14.					WEDNESDAY 16.				
0	2 7 33.27	2.2535	N. 8 45 49.1	9.832	0	3 59 48.78	2.4208	N. 15 26 30.6	6.431
1	2 9 48.58	2.2570	8 55 37.7	9.788	1	4 2 14.10	2.4238	15 32 53.5	6.333
2	2 12 4.11	2.2605	9 5 23.7	9.743	2	4 4 39.61	2.4268	15 39 10.6	6.235
3	2 14 19.84	2.2640	9 15 7.0	9.697	3	4 7 5.30	2.4296	15 45 21.7	6.136
4	2 16 35.79	2.2676	9 24 47.4	9.650	4	4 9 31.16	2.4326	15 51 26.9	6.036
5	2 18 51.95	2.2711	9 34 25.0	9.603	5	4 11 57.19	2.4356	15 57 26.0	5.935
6	2 21 8.32	2.2747	9 43 59.6	9.556	6	4 14 23.40	2.4386	16 3 19.1	5.833
7	2 23 24.91	2.2783	9 53 31.2	9.501	7	4 16 49.78	2.4410	16 9 6.0	5.731
8	2 25 41.71	2.2818	10 2 59.7	9.449	8	4 19 16.32	2.4437	16 14 46.8	5.628
9	2 27 58.73	2.2854	10 12 25.0	9.396	9	4 21 43.02	2.4464	16 20 21.3	5.523
10	2 30 15.96	2.2890	10 21 47.3	9.341	10	4 24 9.89	2.4491	16 25 49.6	5.418
11	2 32 33.41	2.2927	10 31 6.1	9.286	11	4 26 36.91	2.4517	16 31 11.5	5.312
12	2 34 51.08	2.2963	10 40 21.5	9.233	12	4 29 4.09	2.4543	16 36 27.0	5.206
13	2 37 8.96	2.2999	10 49 33.5	9.173	13	4 31 31.42	2.4567	16 41 36.1	5.098
14	2 39 27.06	2.3034	10 58 42.1	9.113	14	4 33 58.89	2.4592	16 46 38.7	4.990
15	2 41 45.37	2.3070	11 7 47.0	9.053	15	4 36 26.51	2.4616	16 51 34.8	4.881
16	2 44 3.90	2.3106	11 16 48.3	8.990	16	4 38 54.28	2.4639	16 56 24.4	4.771
17	2 46 22.65	2.3143	11 25 45.8	8.928	17	4 41 22.18	2.4662	17 1 7.3	4.660
18	2 48 41.62	2.3179	11 34 39.6	8.864	18	4 43 50.32	2.4684	17 5 43.6	4.549
19	2 51 0.80	2.3216	11 43 29.5	8.799	19	4 46 18.39	2.4708	17 10 13.2	4.438
20	2 53 20.20	2.3251	11 52 15.5	8.733	20	4 48 46.69	2.4737	17 14 36.1	4.326
21	2 55 39.82	2.3286	12 0 57.5	8.666	21	4 51 15.12	2.4768	17 18 52.2	4.213
22	2 57 59.65	2.3324	12 9 35.4	8.598	22	4 53 43.67	2.4798	17 23 1.5	4.098
23	3 0 19.70	2.3360	12 18 9.3	8.528	23	4 56 12.34	2.4798	17 27 3.9	3.983
24	3 2 39.97	2.3396	N. 12 26 38.7	8.457	24	4 58 41.12	2.4807	N. 17 30 59.5	3.868

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 17.					SATURDAY 19.				
0	4 58 41.12	2.4897	N.17° 30' 59.5"	3.898	0	6 58 37.46	2.4896	N.18° 17' 32.2"	1.970
1	5 1 10.02	2.4825	17 34 48.2	3.753	1	7 1 6.79	2.4890	18 15 30.3	2.000
2	5 3 39.02	2.4842	17 38 29.9	3.637	2	7 3 36.02	2.4864	18 13 21.3	2.210
3	5 6 8.13	2.4889	17 42 4.6	3.520	3	7 6 5.15	2.4847	18 11 5.1	2.329
4	5 8 37.33	2.4875	17 45 32.3	3.403	4	7 8 34.18	2.4830	18 8 41.8	2.448
5	5 11 6.63	2.4891	17 48 53.0	3.286	5	7 11 3.10	2.4812	18 6 11.3	2.567
6	5 13 36.02	2.4906	17 52 6.6	3.167	6	7 13 31.92	2.4794	18 3 33.8	2.685
7	5 16 5.50	2.4920	17 55 13.1	3.048	7	7 16 0.63	2.4776	18 0 49.2	2.803
8	5 18 35.06	2.4934	17 58 12.4	2.929	8	7 18 29.22	2.4758	17 57 57.5	2.920
9	5 21 4.70	2.4947	18 1 4.6	2.810	9	7 20 57.69	2.4738	17 54 58.8	3.037
10	5 23 34.42	2.4959	18 3 49.6	2.690	10	7 23 26.04	2.4714	17 51 53.1	3.153
11	5 26 4.21	2.4971	18 6 27.4	2.570	11	7 25 54.26	2.4693	17 48 40.5	3.268
12	5 28 34.07	2.4982	18 8 58.0	2.449	12	7 28 22.35	2.4671	17 45 21.0	3.383
13	5 31 3.99	2.4992	18 11 21.3	2.328	13	7 30 50.31	2.4648	17 41 54.6	3.497
14	5 33 33.97	2.5001	18 13 37.4	2.207	14	7 33 18.13	2.4626	17 38 21.3	3.611
15	5 36 4.00	2.5010	18 15 46.2	2.085	15	7 35 45.82	2.4603	17 34 41.2	3.724
16	5 38 34.09	2.5018	18 17 47.6	1.963	16	7 38 13.36	2.4579	17 30 54.4	3.837
17	5 41 4.22	2.5025	18 19 41.7	1.841	17	7 40 40.76	2.4554	17 27 0.8	3.949
18	5 43 34.39	2.5032	18 21 28.5	1.719	18	7 43 8.01	2.4529	17 23 0.5	4.061
19	5 46 4.60	2.5038	18 23 7.9	1.596	19	7 45 35.11	2.4504	17 18 53.5	4.172
20	5 48 34.84	2.5043	18 24 40.0	1.473	20	7 48 2.06	2.4479	17 14 39.9	4.283
21	5 51 5.11	2.5048	18 26 4.7	1.350	21	7 50 28.85	2.4453	17 10 19.7	4.391
22	5 53 35.41	2.5051	18 27 22.0	1.227	22	7 52 55.49	2.4426	17 5 53.0	4.500
23	5 56 5.73	2.5054	N.18 28 31.9	1.103	23	7 55 21.96	2.4398	N.17 1 19.8	4.606
FRIDAY 18.					SUNDAY 20.				
0	5 58 36.06	2.5056	N.18 29 34.4	0.980	0	7 57 48.27	2.4371	N.16 56 40.1	4.716
1	6 1 6.40	2.5058	18 30 29.5	0.856	1	8 0 14.41	2.4343	16 51 54.0	4.822
2	6 3 36.75	2.5059	18 31 17.1	0.733	2	8 2 40.39	2.4315	16 47 1.5	4.928
3	6 6 7.11	2.5059	18 31 57.4	0.609	3	8 5 6.19	2.4286	16 42 2.7	5.033
4	6 8 37.46	2.5058	18 32 30.2	0.485	4	8 7 31.82	2.4257	16 36 57.6	5.137
5	6 11 7.81	2.5057	18 32 55.6	0.361	5	8 9 57.27	2.4228	16 31 46.2	5.241
6	6 13 38.14	2.5055	18 33 13.5	0.237	6	8 12 22.55	2.4198	16 26 28.7	5.344
7	6 16 8.46	2.5053	18 33 24.0	0.113	7	8 14 47.65	2.4168	16 21 5.0	5.446
8	6 18 38.77	2.5049	18 33 27.1	0.011	8	8 17 12.57	2.4138	16 15 35.2	5.547
9	6 21 9.05	2.5044	18 33 22.8	0.134	9	8 19 37.31	2.4108	16 9 59.3	5.647
10	6 23 39.30	2.5039	18 33 11.0	0.256	10	8 22 1.86	2.4077	16 4 17.5	5.746
11	6 26 9.52	2.5033	18 32 51.8	0.382	11	8 24 26.22	2.4045	15 58 29.7	5.845
12	6 28 39.70	2.5026	18 32 25.2	0.505	12	8 26 50.40	2.4014	15 52 36.1	5.943
13	6 31 9.84	2.5019	18 31 51.2	0.628	13	8 29 14.39	2.3982	15 46 36.6	6.040
14	6 33 39.93	2.5011	18 31 9.8	0.751	14	8 31 38.18	2.3950	15 40 31.3	6.138
15	6 36 9.98	2.5003	18 30 21.0	0.874	15	8 34 1.79	2.3918	15 34 20.2	6.233
16	6 38 39.97	2.4993	18 29 24.9	0.997	16	8 36 25.20	2.3886	15 28 3.5	6.326
17	6 41 9.90	2.4983	18 28 21.4	1.119	17	8 38 48.42	2.3853	15 21 41.1	6.419
18	6 43 39.77	2.4973	18 27 10.6	1.243	18	8 41 11.44	2.3821	15 15 13.2	6.511
19	6 46 9.58	2.4962	18 25 52.4	1.364	19	8 43 34.26	2.3788	15 8 39.7	6.603
20	6 48 39.31	2.4950	18 24 26.9	1.486	20	8 45 56.89	2.3755	15 2 0.8	6.693
21	6 51 8.97	2.4937	18 22 54.1	1.607	21	8 48 19.32	2.3722	14 55 16.5	6.783
22	6 53 38.55	2.4923	18 21 14.1	1.728	22	8 50 41.55	2.3690	14 48 26.8	6.873
23	6 56 8.05	2.4909	18 19 26.8	1.849	23	8 53 3.58	2.3657	14 41 31.8	6.960
24	6 58 37.46	2.4895	N.18 17 32.2	1.970	24	8 55 25.41	2.3623	N.14 34 31.6	7.047

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
MONDAY 21.					WEDNESDAY 23.				
0	8 55 25.41	2.3622	N. 14 34 31.6	7.947	0	10 44 58.27	2.3074	N. 7 35 4.1	10.039
1	8 57 47.04	2.3598	14 27 26.2	7.193	1	10 47 10.63	2.3046	7 25 1.0	10.069
2	9 0 8.46	2.3564	14 20 15.6	7.318	2	10 49 22.82	2.3019	7 14 55.8	10.108
3	9 2 29.68	2.3520	14 13 0.0	7.393	3	10 51 34.85	2.1992	7 4 48.4	10.140
4	9 4 50.70	2.3487	14 5 39.4	7.385	4	10 53 46.72	2.1965	6 54 39.0	10.174
5	9 7 11.52	2.3453	13 58 13.8	7.408	5	10 55 58.43	2.1938	6 44 27.6	10.206
6	9 9 32.13	2.3419	13 50 43.3	7.649	6	10 58 9.98	2.1912	6 34 14.3	10.237
7	9 11 52.54	2.3384	13 43 7.9	7.629	7	11 0 21.38	2.1887	6 23 59.1	10.268
8	9 14 12.74	2.3350	13 35 27.8	7.708	8	11 2 32.62	2.1862	6 13 42.2	10.297
9	9 16 32.74	2.3316	13 27 42.9	7.787	9	11 4 43.72	2.1837	6 3 23.5	10.326
10	9 18 52.53	2.3282	13 19 53.4	7.864	10	11 6 54.66	2.1812	5 53 3.2	10.352
11	9 21 12.12	2.3248	13 11 59.3	7.940	11	11 9 5.45	2.1787	5 42 41.2	10.379
12	9 23 31.50	2.3214	13 4 0.6	8.015	12	11 11 16.10	2.1762	5 32 17.7	10.404
13	9 25 50.68	2.3179	12 55 57.5	8.089	13	11 13 26.60	2.1736	5 21 52.7	10.428
14	9 28 9.65	2.3145	12 47 49.9	8.162	14	11 15 36.96	2.1715	5 11 26.3	10.451
15	9 30 28.42	2.3112	12 39 38.0	8.235	15	11 17 47.18	2.1692	5 0 58.5	10.473
16	9 32 46.99	2.3077	12 31 21.7	8.306	16	11 19 57.26	2.1669	4 50 29.5	10.494
17	9 35 5.35	2.3043	12 23 1.2	8.377	17	11 22 7.21	2.1647	4 39 59.2	10.514
18	9 37 23.51	2.3010	12 14 36.5	8.446	18	11 24 17.02	2.1625	4 29 27.8	10.533
19	9 39 41.47	2.2977	12 6 7.7	8.518	19	11 26 26.70	2.1603	4 18 55.2	10.552
20	9 41 59.23	2.2943	11 57 34.9	8.590	20	11 28 36.25	2.1581	4 8 21.6	10.569
21	9 44 16.79	2.2909	11 48 58.1	8.647	21	11 30 45.67	2.1560	3 57 47.0	10.586
22	9 46 34.14	2.2876	11 40 17.3	8.712	22	11 32 54.97	2.1539	3 47 11.4	10.600
23	9 48 51.29	2.2843	N. 11 31 32.7	8.775	23	11 35 4.14	2.1519	N. 3 36 35.0	10.613
TUESDAY 22.					THURSDAY 24.				
0	9 51 8.25	2.2810	N. 11 22 44.3	8.838	0	11 37 13.19	2.1496	N. 3 25 57.8	10.626
1	9 53 25.01	2.2777	11 13 52.1	8.900	1	11 39 22.12	2.1479	3 15 19.8	10.638
2	9 55 41.57	2.2744	11 4 56.3	8.961	2	11 41 30.94	2.1460	3 4 41.2	10.649
3	9 57 57.93	2.2711	10 55 56.8	9.021	3	11 43 39.64	2.1440	2 54 1.9	10.660
4	10 0 14.10	2.2679	10 46 53.8	9.081	4	11 45 48.22	2.1421	2 43 22.0	10.669
5	10 2 30.08	2.2647	10 37 47.3	9.138	5	11 47 56.70	2.1403	2 32 41.6	10.677
6	10 4 45.86	2.2614	10 28 37.3	9.194	6	11 50 5.06	2.1385	2 22 0.8	10.684
7	10 7 1.45	2.2582	10 19 24.0	9.249	7	11 52 13.31	2.1367	2 11 19.6	10.689
8	10 9 16.84	2.2550	10 10 7.4	9.303	8	11 54 21.46	2.1350	2 0 38.1	10.694
9	10 11 32.05	2.2519	10 0 47.5	9.357	9	11 56 29.51	2.1333	1 49 56.3	10.698
10	10 13 47.07	2.2487	9 51 24.5	9.409	10	11 58 37.45	2.1316	1 39 14.3	10.701
11	10 16 1.90	2.2456	9 41 58.4	9.461	11	12 0 45.30	2.1300	1 28 32.1	10.703
12	10 18 16.54	2.2425	9 32 29.2	9.511	12	12 2 53.05	2.1284	1 17 49.9	10.704
13	10 20 31.00	2.2394	9 22 57.0	9.561	13	12 5 0.70	2.1268	1 7 7.6	10.705
14	10 22 45.27	2.2364	9 13 21.9	9.609	14	12 7 8.26	2.1253	0 56 25.3	10.704
15	10 24 59.37	2.2334	9 3 43.9	9.656	15	12 9 15.73	2.1238	0 45 43.1	10.703
16	10 27 13.28	2.2304	8 54 3.2	9.702	16	12 11 23.11	2.1223	0 35 1.1	10.699
17	10 29 27.01	2.2274	8 44 19.7	9.747	17	12 13 30.40	2.1208	0 24 19.3	10.698
18	10 31 40.57	2.2245	8 34 33.6	9.791	18	12 15 37.61	2.1195	0 13 37.7	10.690
19	10 33 53.95	2.2216	8 24 44.8	9.834	19	12 17 44.74	2.1182	N. 0 2 56.4	10.685
20	10 36 7.16	2.2187	8 14 53.5	9.876	20	12 19 51.79	2.1168	S. 0 7 44.5	10.679
21	10 38 20.19	2.2158	8 4 59.7	9.917	21	12 21 58.76	2.1155	0 18 25.0	10.671
22	10 40 33.05	2.2130	7 55 3.5	9.957	22	12 24 5.65	2.1143	0 29 5.0	10.662
23	10 42 45.74	2.2103	7 45 4.9	9.995	23	12 26 12.47	2.1131	0 39 44.5	10.653
24	10 44 58.27	2.2074	N. 7 35 4.1	10.032	24	12 28 19.22	2.1119	S. 0 50 23.4	10.643

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 25.					SUNDAY 27.				
0	12 28 19.22	2.1119	S. 0° 50' 23.4"	10.248	0	14 8 53.68	2.0897	S. 8° 52' 34.2"	7.180
1	12 30 25.90	2.1106	1 1 1.6	10.251	1	14 10 59.00	2.0898	9 1 40.5	7.079
2	12 32 32.52	2.1097	1 11 39.2	10.219	2	14 13 4.33	2.0899	9 10 43.7	7.037
3	12 34 39.07	2.1086	1 22 16.0	10.206	3	14 15 9.66	2.0899	9 19 43.8	6.975
4	12 36 45.55	2.1075	1 32 51.9	10.202	4	14 17 15.00	2.0891	9 28 40.7	6.922
5	12 38 51.97	2.1065	1 43 27.0	10.278	5	14 19 20.35	2.0893	9 37 34.5	6.889
6	12 40 58.33	2.1056	1 54 1.2	10.282	6	14 21 25.71	2.0894	9 46 25.0	6.816
7	12 43 4.63	2.1046	2 4 34.4	10.245	7	14 23 31.07	2.0896	9 55 12.3	6.780
8	12 45 10.88	2.1037	2 15 6.5	10.277	8	14 25 36.45	2.0897	10 3 56.2	6.704
9	12 47 17.07	2.1028	2 25 37.6	10.208	9	14 27 41.84	2.0899	10 12 36.8	6.645
10	12 49 23.21	2.1019	2 36 7.5	10.268	10	14 29 47.24	2.0901	10 21 14.0	6.591
11	12 51 29.30	2.1010	2 46 36.3	10.267	11	14 31 52.65	2.0903	10 29 47.8	6.534
12	12 53 35.33	2.1002	2 57 3.8	10.245	12	14 33 58.08	2.0905	10 38 18.1	6.476
13	12 55 41.32	2.0994	3 7 30.0	10.223	13	14 36 3.52	2.0906	10 46 44.9	6.418
14	12 57 47.26	2.0986	3 17 54.9	10.200	14	14 38 8.97	2.0910	10 55 8.2	6.359
15	12 59 53.16	2.0979	3 28 18.3	10.277	15	14 40 14.44	2.0913	11 3 27.9	6.298
16	13 1 59.01	2.0972	3 38 40.3	10.208	16	14 42 19.93	2.0916	11 11 43.9	6.237
17	13 4 4.82	2.0966	3 49 0.8	10.228	17	14 44 25.43	2.0918	11 19 56.3	6.176
18	13 6 10.60	2.0959	3 59 19.7	10.202	18	14 46 30.95	2.0921	11 28 5.0	6.114
19	13 8 16.34	2.0953	4 9 37.0	10.274	19	14 48 36.49	2.0924	11 36 10.0	6.052
20	13 10 22.04	2.0945	4 19 52.6	10.246	20	14 50 42.04	2.0927	11 44 11.2	5.989
21	13 12 27.71	2.0938	4 30 6.5	10.217	21	14 52 47.61	2.0930	11 52 8.6	5.926
22	13 14 33.35	2.0930	4 40 18.6	10.187	22	14 54 53.20	2.0933	12 0 2.2	5.861
23	13 16 38.96	2.0923	S. 4 50 28.9	10.157	23	14 56 58.81	2.0937	S. 12 7 51.9	5.796
SATURDAY 26.					MONDAY 28.				
0	13 18 44.54	2.0926	S. 5 0 37.4	10.126	0	14 59 4.44	2.0940	S. 12 15 37.7	5.731
1	13 20 50.09	2.0923	5 10 43.9	10.092	1	15 1 10.09	2.0943	12 23 19.6	5.665
2	13 22 55.62	2.0919	5 20 48.5	10.069	2	15 3 15.75	2.0946	12 30 57.5	5.599
3	13 25 1.12	2.0916	5 30 51.0	10.025	3	15 5 21.43	2.0949	12 38 31.4	5.532
4	13 27 6.60	2.0911	5 40 51.5	9.990	4	15 7 27.14	2.0952	12 46 1.3	5.465
5	13 29 12.06	2.0906	5 50 49.9	9.955	5	15 9 32.86	2.0956	12 53 27.1	5.397
6	13 31 17.50	2.0903	6 0 46.1	9.919	6	15 11 38.61	2.0959	13 0 48.9	5.329
7	13 33 22.92	2.0903	6 10 40.1	9.881	7	15 13 44.38	2.0963	13 8 6.5	5.260
8	13 35 28.33	2.0900	6 20 31.8	9.843	8	15 15 50.17	2.0966	13 15 20.0	5.190
9	13 37 33.72	2.0896	6 30 21.2	9.804	9	15 17 55.98	2.0970	13 22 29.3	5.120
10	13 39 39.10	2.0896	6 40 8.3	9.764	10	15 20 1.81	2.0973	13 29 34.4	5.049
11	13 41 44.47	2.0893	6 49 53.0	9.724	11	15 22 7.66	2.0977	13 36 35.2	4.978
12	13 43 49.82	2.0891	6 59 35.2	9.683	12	15 24 13.53	2.0980	13 43 31.8	4.907
13	13 45 55.16	2.0890	7 9 14.9	9.641	13	15 26 19.42	2.0983	13 50 24.1	4.836
14	13 48 0.50	2.0889	7 18 52.1	9.598	14	15 28 25.33	2.0987	13 57 12.0	4.763
15	13 50 5.83	2.0886	7 28 26.7	9.555	15	15 30 31.26	2.0991	14 3 55.6	4.690
16	13 52 11.16	2.0887	7 37 58.7	9.510	16	15 32 37.22	2.0994	14 10 34.8	4.617
17	13 54 16.48	2.0887	7 47 28.0	9.465	17	15 34 43.20	2.0998	14 17 9.6	4.543
18	13 56 21.80	2.0886	7 56 54.5	9.419	18	15 36 49.19	2.1000	14 23 39.9	4.469
19	13 58 27.11	2.0886	8 6 18.3	9.373	19	15 38 55.20	2.1008	14 30 5.7	4.394
20	14 0 32.42	2.0885	8 15 39.3	9.326	20	15 41 1.23	2.1006	14 36 27.1	4.319
21	14 2 37.73	2.0886	8 24 57.4	9.277	21	15 43 7.28	2.1010	14 42 44.0	4.243
22	14 4 43.05	2.0886	8 34 12.6	9.229	22	15 45 13.35	2.1014	14 48 56.3	4.167
23	14 6 48.36	2.0886	8 43 24.9	9.180	23	15 47 19.44	2.1017	14 55 4.0	4.091
24	14 8 53.68	2.0887	S. 8 52 34.2	9.130	24	15 49 25.55	2.1020	S. 15 1 7.2	4.015

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 29.					THURSDAY 31.				
0	15 ^h 49 ^m 25.55 ^s	2.1020	S. 15° 1' 7.2"	6.916	0	17 ^h 30 ^m 28.36 ^s	2.1030	S. 18° 15' 51.4"	2.018
1	15 51 31.68	2.1022	15 7 5.8	6.928	1	17 32 34.53	2.1027	18 17 49.9	1.981
2	15 53 37.82	2.1026	15 12 59.7	6.861	2	17 34 40.68	2.1023	18 19 43.1	1.846
3	15 55 43.98	2.1028	15 18 49.0	6.783	3	17 36 46.80	2.1018	18 21 31.2	1.786
4	15 57 50.16	2.1031	15 24 33.6	6.706	4	17 38 52.90	2.1014	18 23 14.0	1.671
5	15 59 56.35	2.1033	15 30 13.5	6.626	5	17 40 58.97	2.1010	18 24 51.6	1.563
6	16 2 2.56	2.1036	15 35 48.7	6.547	6	17 43 5.02	2.1006	18 26 24.0	1.466
7	16 4 8.79	2.1039	15 41 19.2	6.468	7	17 45 11.04	2.1002	18 27 51.1	1.408
8	16 6 15.03	2.1041	15 46 44.9	6.388	8	17 47 17.04	2.0997	18 29 13.0	1.322
9	16 8 21.28	2.1043	15 52 5.8	6.308	9	17 49 23.00	2.0992	18 30 29.7	1.236
10	16 10 27.55	2.1046	15 57 21.9	6.228	10	17 51 28.94	2.0987	18 31 41.2	1.149
11	16 12 33.83	2.1048	16 2 33.2	6.148	11	17 53 34.84	2.0981	18 32 47.4	1.062
12	16 14 40.13	2.1050	16 7 39.7	6.067	12	17 55 40.71	2.0976	18 33 48.4	0.976
13	16 16 46.43	2.1052	16 12 41.3	4.986	13	17 57 46.55	2.0970	18 34 44.2	0.887
14	16 18 52.75	2.1054	16 17 38.1	4.905	14	17 59 52.35	2.0964	18 35 34.8	0.800
15	16 20 59.08	2.1056	16 22 30.0	4.823	15	18 1 58.12	2.0958	18 36 20.1	0.713
16	16 23 5.42	2.1057	16 27 16.9	4.741	16	18 4 3.85	2.0952	18 37 0.2	0.626
17	16 25 11.77	2.1058	16 31 58.9	4.659	17	18 6 9.54	2.0946	18 37 35.1	0.538
18	16 27 18.12	2.1059	16 36 36.0	4.577	18	18 8 15.20	2.0940	18 38 4.8	0.451
19	16 29 24.48	2.1061	16 41 8.1	4.494	19	18 10 20.82	2.0933	18 38 29.3	0.364
20	16 31 30.85	2.1062	16 45 35.3	4.411	20	18 12 26.40	2.0926	18 38 48.5	0.277
21	16 33 37.23	2.1063	16 49 57.5	4.328	21	18 14 31.94	2.0919	18 39 2.6	0.191
22	16 35 43.61	2.1064	16 54 14.7	4.245	22	18 16 37.43	2.0912	18 39 11.4	0.104
23	16 37 50.00	2.1065	S. 16° 58' 26.9"	4.161	23	18 18 42.88	2.0905	S. 18° 39' 15.0"	0.017
WEDNESDAY 30.					FRIDAY, NOVEMBER 1.				
0	16 39 56.39	2.1065	S. 17° 2' 34.0"	4.077	0	18 20 48.29	2.0898	S. 18° 39' 13.5"	0.000
1	16 42 2.78	2.1065	17 6 36.1	3.993	<p>PHASES OF THE MOON.</p> <p>☾ First Quarter, . . . 5^d 6^h 17.1^m ○ Full Moon, . . . 13 1 24.3 ☾ Last Quarter, . . . 19 21 16.9 ● New Moon, . . . 27 1 2.9</p>				
2	16 44 9.17	2.1066	17 10 33.2	3.909					
3	16 46 15.56	2.1066	17 14 25.2	3.824					
4	16 48 21.96	2.1066	17 18 12.1	3.740					
5	16 50 28.36	2.1066	17 21 53.9	3.656	<p>☾ Apogee, 5^d 5.5^h ☾ Perigee, 17 15.1</p>				
6	16 52 34.75	2.1066	17 25 30.7	3.570					
7	16 54 41.14	2.1064	17 29 2.4	3.486					
8	16 56 47.52	2.1064	17 32 28.9	3.400					
9	16 58 53.90	2.1063	17 35 50.3	3.314					
10	17 1 0.27	2.1062	17 39 6.6	3.229					
11	17 3 6.64	2.1061	17 42 17.8	3.143					
12	17 5 13.00	2.1060	17 45 23.8	3.057					
13	17 7 19.36	2.1058	17 48 24.7	2.971					
14	17 9 25.70	2.1056	17 51 20.4	2.885					
15	17 11 32.03	2.1054	17 54 10.9	2.798					
16	17 13 38.35	2.1052	17 56 56.2	2.713					
17	17 15 44.66	2.1050	17 59 36.3	2.626					
18	17 17 50.95	2.1048	18 2 11.2	2.539					
19	17 19 57.23	2.1046	18 4 40.9	2.452					
20	17 22 3.49	2.1043	18 7 5.4	2.366					
21	17 24 9.73	2.1039	18 9 24.7	2.278					
22	17 26 15.96	2.1036	18 11 38.8	2.192					
23	17 28 22.17	2.1033	18 13 47.7	2.105					
24	17 30 28.36	2.1030	S. 18° 15' 51.4"	2.018					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	42° 46' 20"	3186	44° 12' 46"	3200	45° 38' 55"	3214	47° 4' 48"	3227
	Mars W.	17 20 5	3178	18 46 40	3178	20 13 15	3180	21 39 48	3184
	α Aquilæ E.	69 49 40	3260	68 26 26	3273	67 3 39	3299	65 41 21	3434
	Jupiter E.	98 13 11	2806	96 38 51	2819	95 4 48	2831	93 31 2	2845
	Fomalhaut E.	102 32 58	3174	101 6 18	3184	99 39 50	3193	98 13 33	3203
2	SUN W.	54 10 22	3290	55 34 45	3303	56 58 54	3313	58 22 50	3324
	Mars W.	28 51 6	3216	30 16 57	3223	31 42 38	3221	33 8 10	3240
	α Aquilæ E.	58 57 31	3271	57 38 25	3203	56 19 54	3238	55 2 1	3276
	Jupiter E.	85 46 3	2908	84 13 48	2913	82 41 46	2924	81 9 58	2933
	Fomalhaut E.	91 5 5	3265	89 40 1	3266	88 15 10	3277	86 50 32	3288
3	SUN W.	65 19 31	3273	66 42 18	3281	68 4 56	3290	69 27 24	3297
	Mars W.	40 13 28	3278	41 38 5	3285	43 2 33	3293	44 26 54	3299
	Saturn W.	23 45 46	3067	25 14 36	3072	26 43 20	3075	28 12 0	3093
	α Aquilæ E.	48 43 4	3293	47 29 36	3044	46 17 1	4001	45 5 22	4061
	Jupiter E.	73 34 2	2981	72 3 25	2989	70 32 58	2996	69 2 40	3003
	Fomalhaut E.	79 50 33	3348	78 27 13	3356	77 4 6	3368	75 41 13	3379
4	SUN W.	76 17 46	3429	77 39 30	3433	78 1 9	3438	80 22 43	3441
	Mars W.	51 26 52	3326	52 50 34	3330	54 14 12	3333	55 37 45	3336
	Saturn W.	35 33 48	3102	37 1 55	3106	38 29 58	3108	39 57 58	3111
	Jupiter E.	61 33 15	3033	60 3 43	3036	58 34 17	3042	57 4 56	3046
	Fomalhaut E.	68 50 9	3440	67 28 38	3453	66 7 21	3466	64 46 19	3469
	α Pegasi E.	83 14 48	3336	81 51 6	3332	80 27 32	3338	79 4 5	3345
5	SUN W.	87 9 42	3462	88 31 0	3453	89 52 17	3453	91 13 34	3452
	Mars W.	62 34 47	3345	63 58 7	3345	65 21 27	3345	66 44 46	3344
	Saturn W.	47 17 17	3119	48 45 4	3118	50 12 52	3117	51 40 41	3117
	Antares W.	32 20 39	3291	33 45 1	3276	35 9 41	3261	36 34 38	3248
	Jupiter E.	49 39 8	3037	48 10 6	3056	46 41 5	3056	45 12 4	3059
	Fomalhaut E.	58 5 4	3556	56 45 40	3571	55 26 34	3589	54 7 48	3609
6	α Pegasi E.	72 8 34	3374	70 45 48	3381	69 23 10	3367	68 0 39	3393
	SUN W.	98 0 20	3441	99 21 50	3436	100 43 24	3434	102 5 2	3429
	Mars W.	73 41 50	3332	75 5 24	3329	76 29 2	3325	77 52 45	3319
	Saturn W.	59 0 10	3105	60 28 14	3101	61 56 22	3097	63 24 35	3093
	Antares W.	43 43 0	3191	45 9 20	3182	46 35 51	3172	48 2 34	3162
	Jupiter E.	37 46 54	3053	36 17 46	3050	34 48 36	3047	33 19 22	3046
7	Fomalhaut E.	47 39 41	3728	46 23 24	3750	45 7 39	3792	43 52 29	3828
	α Pegasi E.	61 9 47	3426	59 48 0	3433	58 26 21	3442	57 4 52	3451
	α Arietis E.	104 0 37	3200	102 34 28	3195	101 8 13	3189	99 41 51	3184
	SUN W.	108 54 46	3396	110 17 5	3391	111 39 32	3382	113 2 9	3374
	Mars W.	84 52 53	3289	86 17 17	3282	87 41 51	3274	89 6 33	3265
	Saturn W.	70 47 15	3092	72 16 11	3056	73 45 15	3048	75 14 28	3040
8	Antares W.	55 19 8	3112	56 47 3	3101	58 15 11	3091	59 43 31	3081
	α Pegasi E.	50 20 13	3509	48 59 59	3525	47 40 2	3542	46 20 24	3563
	α Arietis E.	92 28 15	3192	91 1 8	3144	89 33 52	3137	88 6 27	3129
	SUN W.	119 57 47	3325	121 21 30	3314	122 45 25	3303	124 9 33	3293
	Mars W.	96 12 42	3217	97 38 31	3207	99 4 32	3196	100 30 46	3184
	Saturn W.	82 43 16	2993	84 13 37	2983	85 44 11	2972	87 14 59	2962
	Antares W.	67 8 32	3026	68 38 14	3013	70 8 11	3001	71 38 23	2989
	α Pegasi E.	39 48 38	3707	38 31 58	3748	37 16 2	3797	36 0 57	3843

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1	SUN W.	48° 30' 25"	3240	49° 55' 47"	3263	51° 20' 58"	3268	52° 45' 45"	3278
	Mars W.	23 6 16	3188	24 32 39	3193	25 58 56	3200	27 25 5	3207
	α Aquilæ E.	64 19 32	3463	62 58 14	3480	61 37 27	3508	60 17 12	3539
	Jupiter E.	91 57 31	2856	90 24 17	2869	88 51 17	2880	87 18 33	2891
	Fomalhaut E.	96 47 27	3213	95 21 33	3233	93 55 51	3234	92 30 22	3244
2	SUN W.	50 46 34	3335	61 10 5	3346	62 33 25	3355	63 56 33	3364
	Mars W.	34 33 32	3247	35 58 45	3266	37 23 49	3264	38 48 43	3271
	α Aquilæ E.	53 44 48	3713	52 28 15	3758	51 12 26	3798	49 57 22	3844
	Jupiter E.	79 38 23	2944	78 7 0	2954	76 35 49	2963	75 4 50	2973
	Fomalhaut E.	85 26 6	3299	84 1 53	3310	82 37 53	3321	81 14 6	3333
3	SUN W.	70 49 44	3405	72 11 55	3411	73 33 59	3417	74 55 56	3423
	Mars W.	45 51 7	3305	47 15 13	3311	48 39 12	3316	50 3 5	3321
	Saturn W.	29 40 32	3065	31 8 59	3090	32 37 21	3096	34 5 36	3098
	α Aquilæ E.	43 54 42	4136	42 45 5	4197	41 36 36	4274	40 29 19	4356
	Jupiter E.	67 32 31	3010	66 2 31	3017	64 32 39	3022	63 2 54	3028
	Fomalhaut E.	74 18 33	3392	72 56 7	3403	71 33 54	3415	70 11 55	3427
4	SUN W.	81 44 13	3445	83 5 39	3447	84 27 2	3450	85 48 22	3450
	Mars W.	57 1 14	3339	58 24 41	3341	59 48 5	3343	61 11 27	3344
	Saturn W.	41 25 54	3114	42 53 47	3114	44 21 39	3117	45 49 28	3117
	Jupiter E.	55 35 40	3048	54 6 27	3052	52 37 18	3054	51 8 12	3056
	Fomalhaut E.	63 25 32	3494	62 5 1	3507	60 44 45	3523	59 24 46	3538
	α Pegasi E.	77 40 45	3361	76 17 32	3367	74 54 26	3368	73 31 27	3368
5	SUN W.	92 34 52	3481	93 56 11	3480	95 17 31	3447	96 38 54	3448
	Mars W.	68 8 7	3343	69 31 29	3341	70 54 53	3338	72 18 20	3336
	Saturn W.	53 8 30	3115	54 36 21	3113	56 4 15	3111	57 32 11	3109
	Antares W.	37 59 50	3335	39 25 18	3334	40 50 59	3313	42 16 53	3292
	Jupiter E.	43 43 4	3068	42 14 3	3066	40 45 2	3065	39 15 59	3065
	Fomalhaut E.	52 49 23	3639	51 31 20	3651	50 13 41	3676	48 56 28	3700
	α Pegasi E.	66 38 14	3399	65 15 56	3406	63 53 46	3412	62 31 43	3418
6	SUN W.	103 26 46	3423	104 48 36	3418	106 10 32	3413	107 32 35	3408
	Mars W.	79 16 33	3314	80 40 28	3309	82 4 29	3303	83 28 37	3296
	Saturn W.	64 52 53	3087	66 21 18	3083	67 49 50	3076	69 18 29	3070
	Antares W.	49 29 29	3189	50 56 36	3143	52 23 55	3133	53 51 25	3123
	Jupiter E.	31 50 5	3042	30 20 44	3038	28 51 18	3034	27 21 48	3030
	Fomalhaut E.	42 37 56	3690	41 24 5	3616	40 11 1	3665	38 58 47	4021
	α Pegasi E.	55 43 33	3460	54 22 24	3471	53 1 27	3482	51 40 43	3495
	α Arietis E.	98 15 23	3178	96 48 48	3171	95 22 4	3165	93 55 13	3160
7	SUN W.	114 24 55	3365	115 47 52	3366	117 10 59	3346	118 34 17	3336
	Mars W.	90 31 25	3266	91 56 28	3247	93 21 41	3237	94 47 5	3228
	Saturn W.	76 43 51	3031	78 13 25	3023	79 43 10	3013	81 13 7	3003
	Antares W.	61 12 4	3070	62 40 50	3050	64 9 50	3047	65 39 4	3036
	α Pegasi E.	45 1 8	3584	43 42 16	3610	42 23 52	3637	41 5 58	3669
	α Arietis E.	86 38 53	3131	85 11 9	3113	83 43 15	3104	82 15 10	3096
8	SUN W.	125 33 54	3280	126 58 29	3268	128 23 18	3255	129 48 22	3243
	Mars W.	101 57 14	3173	103 23 56	3161	104 50 51	3149	106 18 2	3137
	Saturn W.	88 46 0	2950	90 17 15	2939	91 48 45	2927	93 20 30	2914
	Antares W.	73 8 50	2976	74 39 33	2964	76 10 31	2951	77 41 45	2939
	α Pegasi E.	34 46 49	3918	33 33 47	3891	32 21 59	4078	31 11 36	4178

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8	α Arietis E.	80° 46' 55"	3067	79° 18' 29"	3076	77° 49' 53"	3069	76° 21' 6"	3060
9	Sun W.	131 13 40	3230	132 39 14	3217	134 5 3	3204	135 31 8	3191
	Mars W.	107 45 27	3124	109 13 8	3111	110 41 4	3098	112 9 16	3084
	Saturn W.	94 52 31	2902	96 24 47	2891	97 57 18	2876	99 30 7	2864
	Antares W.	79 13 15	2925	80 45 2	2912	82 17 5	2899	83 49 25	2886
	α Arietis E.	68 54 20	3014	67 24 25	3005	65 54 18	2990	64 24 0	2987
	Aldebaran E.	101 4 5	2861	99 30 56	2848	97 57 30	2836	96 23 47	2823
10	Saturn W.	107 18 24	2797	108 52 56	2784	110 27 45	2769	112 2 54	2756
	Antares W.	91 35 24	2818	93 9 29	2805	94 43 51	2791	96 18 31	2777
	α Aquilæ W.	47 29 12	2849	48 46 54	2839	50 5 38	2828	51 25 20	2819
	α Arietis E.	56 49 56	2949	55 18 39	2942	53 47 14	2927	52 15 42	2913
	Aldebaran E.	88 30 59	2755	86 55 32	2741	85 19 47	2728	83° 43 44	2713
11	Antares W.	104 16 16	2711	105 52 41	2698	107 29 23	2686	109 6 22	2673
	α Aquilæ W.	58 16 37	2822	59 41 10	2817	61 6 23	2814	62 32 15	2803
	Jupiter W.	24 21 9	2655	25 58 49	2639	27 36 51	2624	29 15 14	2608
	α Arietis E.	44 37 4	2927	43 5 20	2921	41 33 41	2908	40 2 10	2896
	Aldebaran E.	75 38 47	2643	74 0 51	2630	72 22 37	2616	70 44 4	2601
12	α Aquilæ W.	69 50 27	2648	71 19 40	2636	72 49 21	2623	74 19 30	2613
	Fomalhaut W.	37 49 35	2924	39 9 33	2911	40 31 3	2897	41 53 57	2880
	Jupiter W.	37 32 16	2635	39 12 40	2622	40 53 22	2608	42 34 24	2596
	α Pegasi W.	25 15 25	4060	26 16 58	4058	27 22 39	4156	28 31 47	3974
	Aldebaran E.	62 26 36	2535	60 46 12	2522	59 5 29	2510	57 24 29	2497
	Pollux E.	106 3 5	2618	104 24 35	2604	102 45 46	2591	101 6 38	2577
13	α Aquilæ W.	81 56 13	2606	83 28 37	2593	85 1 19	2580	86 34 18	2567
	Jupiter W.	51 4 2	2434	52 46 48	2423	54 29 50	2419	56 13 8	2401
	Fomalhaut W.	49 5 59	3041	50 35 21	3000	52 5 34	2963	53 36 33	2929
	α Pegasi W.	34 56 18	2326	36 19 22	2376	37 44 3	2300	39 10 12	2134
	Aldebaran E.	48 55 12	2436	47 12 31	2426	45 29 34	2416	43 46 22	2406
	Pollux E.	92 46 27	2515	91 5 35	2504	89 24 27	2493	87 43 4	2483
14	α Aquilæ W.	94 22 34	2513	95 56 45	2500	97 31 2	2504	99 5 25	2501
	Jupiter W.	64 53 12	2554	66 37 53	2546	68 22 46	2537	70 7 51	2528
	Fomalhaut W.	61 21 20	2792	62 55 58	2770	64 31 5	2750	66 6 38	2739
	α Pegasi W.	46 38 38	2688	48 11 12	2692	49 44 33	2618	51 18 37	2708
	Aldebaran E.	35 6 50	2350	33 22 16	2350	31 37 29	2342	29 52 31	2335
	Pollux E.	79 12 48	2436	77 30 8	2431	75 47 18	2424	74 4 18	2419
15	Jupiter W.	78 55 52	2397	80 41 55	2392	82 28 7	2387	84 14 25	2381
	Fomalhaut W.	74 10 1	2659	75 47 37	2647	77 25 28	2638	79 3 32	2628
	α Pegasi W.	59 17 55	2670	60 55 15	2652	62 32 59	2636	64 11 5	2621
	α Arietis W.	18 12 54	4115	19 22 41	3812	20 37 31	3573	21 56 35	3365
	Pollux E.	65 27 24	2396	63 43 43	2394	61 59 59	2391	60 16 12	2391
	Regulus E.	101 11 37	2304	99 25 43	2298	97 39 41	2293	95 53 31	2289
16	Jupiter W.	93 7 32	2364	94 54 23	2362	96 41 19	2200	98 28 18	2298
	Fomalhaut W.	87 16 29	2599	88 55 26	2596	90 34 27	2593	92 13 31	2593
	α Pegasi W.	72 26 5	2565	74 5 49	2558	75 45 41	2551	77 25 44	2545
	α Arietis W.	29 14 44	2648	30 48 10	2788	32 22 54	2737	33 56 45	2693
	Pollux E.	51 37 17	2397	49 53 38	2402	48 10 6	2407	46 26 41	2414
	Regulus E.	87 1 8	2370	85 14 24	2368	83 27 37	2365	81 40 46	2363

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8	α Arietis E.	74° 52' 7"	3061	73 22 57	3043	71° 53' 36"	3033	70° 24' 4"	3023
9	SUN W.	136 57 28	3178	136 24 4	3163	139 50 57	3150	141 18 6	3135
	Mars W.	113 37 45	3071	115 6 29	3067	116 35 31	3048	118 4 50	3029
	Saturn W.	101 3 12	2851	102 36 34	2838	104 10 13	2824	105 44 10	2811
	Antares W.	85 22 2	2973	86 54 56	2969	88 28 8	2945	90 1 37	2931
	α Arietis E.	62 53 31	2979	61 22 52	2971	59 52 3	2963	58 21 4	2956
	Aldebaran E.	94 49 48	2909	93 15 32	2796	91 40 58	2782	90 6 7	2769
10	Saturn W.	113 38 20	2743	115 14 4	2727	116 50 8	2715	118 26 28	2699
	Antares W.	97 53 29	2763	99 28 45	2740	101 4 18	2728	102 40 8	2724
	α Aquilæ W.	52 45 56	3443	54 7 24	3399	55 29 42	3368	56 52 47	3319
	α Arietis E.	50 44 5	2929	49 12 23	2927	47 40 38	2926	46 8 51	2925
	Aldebaran E.	82 7 22	2899	80 30 41	2886	78 53 42	2872	77 16 24	2867
11	Antares W.	110 43 38	2980	112 21 11	2949	113 58 59	2938	115 37 3	2927
	α Aquilæ W.	63 58 45	3163	65 25 51	3124	66 53 31	3097	68 21 44	3073
	Jupiter W.	30 53 58	2893	32 33 2	2878	34 12 27	2864	35 52 11	2850
	α Arietis E.	38 30 49	2968	36 59 44	2974	35 28 59	2996	33 58 40	3020
	Aldebaran E.	69 5' 11"	2888	67 26 0	2874	65 46 30	2861	64 6 42	2848
12	α Aquilæ W.	75 50 4	2963	77 21 3	2945	78 52 25	2927	80 24 9	2912
	Fomalhaut W.	43 18 8	3239	44 43 31	3183	46 10 0	3132	47 37 31	3085
	Jupiter W.	44 15 44	2492	45 57 23	2470	47 39 18	2456	49 21 32	2445
	α Pegasi W.	29 43 52	2618	30 58 36	2600	32 15 44	2580	33 35 2	2464
	Aldebaran E.	55 43 12	2483	54 1 38	2473	52 19 46	2460	50 37 37	2449
	Pollux E.	99 27 11	2564	97 47 26	2561	96 7 23	2539	94 27 3	2527
13	α Aquilæ W.	88 7 32	2646	89 41 0	2637	91 14 40	2626	92 48 32	2620
	Jupiter W.	57 56 40	2391	59 40 28	2392	61 24 29	2379	63 8 44	2368
	Fomalhaut W.	55 8 15	2909	56 40 37	2898	58 13 37	2881	59 47 12	2866
	α Pegasi W.	40 37 40	3074	42 6 21	3021	43 36 8	2973	45 6 55	2928
	Aldebaran E.	42 2 56	2396	40 19 15	2386	38 35 20	2376	36 51 11	2368
	Pollux E.	86 1 27	2473	84 19 36	2464	82 37 32	2456	80 55 16	2447
14	α Aquilæ W.	100 39 52	2798	102 14 22	2798	103 48 52	2799	105 23 21	2801
	Jupiter W.	71 53 7	2332	73 38 34	2315	75 24 11	2309	77 9 57	2303
	Fomalhaut W.	67 42 36	2714	69 18 57	2698	70 55 39	2684	72 32 41	2670
	α Pegasi W.	52 53 21	2760	54 28 42	2735	56 4 36	2711	57 41 1	2699
	Aldebaran E.	28 7 22	2327	26 22 2	2320	24 36 32	2314	22 50 53	2308
	Pollux E.	72 21 10	2413	70 37 54	2408	68 54 30	2403	67 11 0	2399
15	Jupiter W.	86 0 51	2278	87 47 23	2274	89 34 1	2270	91 20 44	2267
	Fomalhaut W.	80 41 49	2620	82 20 17	2614	83 58 53	2608	85 37 37	2602
	α Pegasi W.	65 49 31	2908	67 28 15	2896	69 7 17	2884	70 46 34	2874
	α Arietis W.	23 19 9	3233	24 44 41	3107	26 12 42	3004	27 42 50	2920
	Pollux E.	58 32 24	2390	56 48 35	2391	55 4 47	2392	53 21 1	2394
	Regulus E.	94 7 15	2284	92 20 52	2279	90 34 22	2276	88 47 47	2273
16	Jupiter W.	100 15 19	2266	102 2 23	2266	103 49 28	2264	105 36 35	2263
	Fomalhaut W.	93 52 36	2892	95 31 42	2893	97 10 47	2894	98 49 50	2896
	α Pegasi W.	79 5 55	2540	80 46 13	2535	82 26 37	2533	84 7 5	2530
	α Arietis W.	35 35 34	2684	37 13 14	2623	38 51 38	2604	40 30 41	2570
	Pollux E.	44 43 26	2422	43 0 23	2422	41 17 34	2444	39 35 2	2456
	Regulus E.	79 53 52	2261	78 6 55	2260	76 19 56	2259	74 32 56	2256

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16	SUN E.	141° 21' 30"	2808	139° 42' 32"	2808	138° 3' 27"	2800	136° 24' 18"	2807
17	α Pegasi W.	85 47 37	2828	87 28 11	2827	89 8 47	2827	90 49 23	2837
	α Arietis W.	42 10 17	2848	43 50 23	2830	45 30 55	2814	47 11 49	2800
	Pollux E.	37 52 49	2474	36 10 59	2494	34 29 37	2616	32 48 46	2643
	Regulus E.	72 45 55	2258	70 58 53	2258	69 11 52	2268	67 24 51	2256
	SUN E.	128 7 45	2679	126 28 21	2678	124 48 56	2678	123 9 31	2678
18	α Pegasi W.	99 11 49	2841	100 52 5	2847	102 32 13	2853	104 12 13	2860
	α Arietis W.	55 40 30	2462	57 22 51	2447	59 5 19	2443	60 47 54	2438
	Aldebaran W.	21 38 17	2267	23 25 13	2263	25 12 7	2265	26 58 58	2266
	Regulus E.	58 30 0	2264	56 43 7	2266	54 56 17	2268	53 9 30	2270
	SUN E.	114 52 36	2683	113 13 17	2683	111 34 1	2687	109 54 48	2688
19	α Arietis W.	69 21 53	2429	71 4 46	2429	72 47 40	2429	74 30 34	2430
	Aldebaran W.	35 52 25	2280	37 38 54	2283	39 25 19	2286	41 11 39	2289
	Regulus E.	44 16 32	2285	42 30 10	2287	40 43 52	2281	38 57 40	2283
	SUN E.	101 39 31	2603	100 0 40	2606	98 21 53	2610	96 43 11	2613
20	α Arietis W.	83 4 30	2441	84 47 7	2444	86 29 39	2446	88 12 6	2451
	Aldebaran W.	50 2 3	2308	51 47 51	2311	53 33 34	2315	55 19 11	2320
	Regulus E.	30 8 6	2317	28 22 31	2322	26 37 4	2327	24 51 44	2333
	SUN E.	88 30 59	2634	86 52 50	2639	85 14 46	2643	83 36 49	2647
21	α Arietis W.	96 42 49	2476	98 24 36	2482	100 6 14	2489	101 47 43	2495
	Aldebaran W.	64 5 39	2343	65 50 37	2347	67 35 28	2352	69 20 12	2357
	Pollux W.	22 45 20	2673	24 18 15	2613	25 52 26	2765	27 27 40	2725
	SUN E.	75 28 40	2673	73 51 23	2678	72 14 13	2663	70 37 10	2660
22	Aldebaran W.	78 2 2	2383	79 46 2	2388	81 29 54	2394	83 13 38	2399
	Pollux W.	35 34 37	2607	37 13 22	2606	38 52 22	2607	40 31 35	2679
	SUN E.	62 33 53	2719	60 57 38	2726	59 21 31	2732	57 45 33	2738
23	Aldebaran W.	91 50 13	2429	93 33 6	2436	95 15 50	2442	96 58 25	2449
	Pollux W.	48 49 35	2663	50 29 21	2663	52 9 7	2664	53 48 52	2664
	SUN E.	49 48 0	2774	48 12 58	2782	46 38 7	2790	45 3 26	2796
24	Pollux W.	62 6 54	2680	63 46 16	2685	65 25 32	2690	67 4 41	2695
	Regulus W.	25 25 37	2494	27 6 58	2601	28 48 10	2607	30 29 13	2616
	SUN E.	37 12 51	2846	35 39 21	2865	34 6 4	2866	32 33 1	2876
29	SUN W.	23 21 25	3294	24 45 43	3301	26 9 53	3307	27 33 56	3313
	α Aquilæ E.	62 46 35	2470	61 25 37	2497	60 5 10	2527	58 45 16	2550
	Jupiter E.	89 21 3	2677	87 48 15	2688	86 15 40	2696	84 43 19	2700
	Fomalhaut E.	95 3 30	3198	93 37 18	3207	92 11 17	3216	90 45 27	3225
30	SUN W.	34 32 16	3361	35 55 29	3368	37 18 34	3365	38 41 30	3373
	α Aquilæ E.	52 14 58	2748	50 58 58	2790	49 43 45	2827	48 29 21	2867
	Jupiter E.	77 4 45	2968	75 33 39	2966	74 2 45	2976	72 32 1	2986
	Fomalhaut E.	83 39 16	3279	82 14 40	3290	80 50 17	3301	79 26 7	3313
	α Pegasi E.	96 27 10	3294	97 1 29	3321	95 35 57	3329	94 10 34	3346
31	SUN W.	45 33 59	3410	46 56 4	3416	48 18 2	3423	49 39 52	3430
	Jupiter E.	65 1 4	3025	63 31 21	3033	62 1 48	3039	60 32 23	3045
	α Pegasi E.	87 5 52	3285	85 41 23	3294	84 17 4	3301	82 52 54	3310

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
16	SUN	E.	134° 45' 5"	2884	133° 5' 48"	2883	131° 26' 29"	2881	129° 47' 8"	2880
17	α Pegasi	W.	92 29 58	2829	94 10 31	2831	95 51 1	2834	97 31 27	2887
	α Arietis	W.	48 53 3	2487	50 34 34	2477	52 16 20	2467	53 58 19	2459
	Pollux	E.	31 8 32	2874	29 29 2	2813	27 50 25	2869	26 12 50	2712
	Regulus	E.	65 37 50	2269	63 50 50	2260	62 3 52	2261	60 16 55	2263
	SUN	E.	121 30 6	2879	119 50 42	2879	118 11 18	2880	116 31 56	2882
18	α Pegasi	W.	105 52 4	2867	107 31 44	2878	109 11 13	2884	110 50 30	2898
	α Arietis	W.	62 30 35	2435	64 13 20	2423	65 56 9	2430	67 39 1	2420
	Aldebaran	W.	28 45 47	2269	30 32 32	2271	32 19 14	2274	34 5 52	2277
	Regulus	E.	51 22 47	2273	49 36 7	2275	47 49 31	2278	46 2 59	2281
	SUN	E.	108 15 37	2891	106 36 30	2893	104 57 26	2897	103 18 27	2899
19	α Arietis	W.	76 13 26	2431	77 56 16	2433	79 39 4	2435	81 21 49	2438
	Aldebaran	W.	42 57 54	2293	44 44 4	2296	46 30 9	2300	48 16 9	2304
	Regulus	E.	37 11 33	2299	35 25 32	2303	33 39 37	2307	31 53 48	2312
	SUN	E.	95 4 34	2617	93 26 2	2621	91 47 35	2625	90 9 14	2629
20	α Arietis	W.	89 54 28	2456	91 36 43	2460	93 18 52	2465	95 0 54	2470
	Aldebaran	W.	57 4 41	2324	58 50 5	2328	60 35 23	2333	62 20 34	2337
	Regulus	E.	23 6 33	2340	21 21 32	2346	19 36 40	2354	17 51 59	2368
	SUN	E.	81 58 58	2662	80 21 13	2667	78 43 35	2673	77 6 4	2677
21	α Arietis	W.	103 29 3	2502	105 10 14	2510	106 51 14	2517	108 32 3	2525
	Aldebaran	W.	71 4 49	2362	72 49 19	2367	74 33 41	2372	76 17 56	2378
	Pollux	W.	29 3 47	2690	30 40 40	2693	32 18 10	2640	33 56 11	2621
	SUN	E.	69 0 15	2695	67 23 28	2700	65 46 48	2706	64 10 16	2712
22	Aldebaran	W.	84 57 14	2405	86 40 42	2411	88 24 1	2417	90 7 11	2423
	Pollux	W.	42 10 59	2673	43 50 31	2689	45 30 9	2686	47 9 51	2684
	SUN	E.	56 9 44	2748	54 34 4	2752	52 58 33	2760	51 23 12	2766
23	Aldebaran	W.	96 40 50	2455	100 23 6	2462	102 5 12	2470	103 47 8	2476
	Pollux	W.	55 28 36	2666	57 8 17	2689	58 47 54	2673	60 27 26	2676
	SUN	E.	43 28 56	2807	41 54 37	2816	40 20 30	2825	38 46 34	2835
24	Pollux	W.	68 43 43	2601	70 22 37	2607	72 1 22	2614	73 39 58	2620
	Regulus	W.	32 10 6	2621	33 50 50	2629	35 31 23	2636	37 11 46	2643
	SUN	E.	31 0 12	2981	29 27 39	2901	27 55 22	2916	26 23 22	2920
29	SUN	W.	28 57 52	3320	30 21 40	3326	31 45 21	3334	33 8 53	3342
	α Aquilæ	E.	57 25 57	3301	56 7 13	3297	54 49 8	3263	53 31 42	3208
	Jupiter	E.	83 11 12	2919	81 39 16	2928	80 7 34	2929	78 36 3	2948
	Fomalhaut	E.	89 19 48	3236	87 54 21	3247	86 29 7	3267	85 4 5	3268
30	SUN	W.	40 4 17	3381	41 26 55	3388	42 49 25	3396	44 11 46	3403
	α Aquilæ	E.	47 15 48	3342	46 3 11	4001	44 51 32	4084	43 40 55	4133
	Jupiter	E.	71 1 29	2928	69 31 8	3001	68 0 57	3009	66 30 55	3017
	Fomalhaut	E.	78 2 11	3226	76 38 29	3238	75 15 1	3261	73 51 48	3264
	α Pegasi	E.	92 45 19	3253	91 20 13	3262	89 55 17	3270	88 30 30	3277
31	SUN	W.	51 1 35	3435	52 23 12	3441	53 44 42	3448	55 6 6	3451
	Jupiter	E.	59 3 6	3062	57 33 57	3067	56 4 55	3066	54 36 0	3068
	α Pegasi	E.	81 28 54	3318	80 5 3	3325	78 41 21	3334	77 17 49	3343

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from Apparent Time.	Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.				
Fri.	1	^h 14 ^m 24 ^s 53.09	^s 9.794	S. 14° 22' 44.4"	["] 48.24	16' 9.79"	^s 66.92	^m 16 ^s 17.25	^s 0.062	
Sat.	2	14 28 48.54	9.827	14 41 55.4	47.65	16 10.04	67.04	16 18.36	0.029	
Sun.	3	14 32 44.77	9.860	15 0 52.1	47.04	16 10.29	67.15	16 18.68	0.004	
Mon.	4	14 36 41.80	9.893	15 19 34.0	46.42	16 10.54	67.27	16 18.20	0.037	
Tues.	5	14 40 39.64	9.926	15 38 0.6	45.77	16 10.79	67.39	16 16.92	0.070	
Wed.	6	14 44 38.28	9.960	15 56 11.5	45.11	16 11.08	67.51	16 14.84	0.104	
Thur.	7	14 48 37.74	9.994	16 14 6.5	44.44	16 11.27	67.63	16 11.94	0.138	
Fri.	8	14 52 38.02	10.029	16 31 45.2	43.75	16 11.51	67.75	16 8.22	0.173	
Sat.	9	14 56 39.14	10.064	16 49 7.0	43.04	16 11.74	67.87	16 3.67	0.207	
Sun.	10	15 0 41.10	10.099	17 6 11.7	42.32	16 11.97	67.99	15 58.28	0.242	
Mon.	11	15 4 43.90	10.134	17 22 58.9	41.58	16 12.20	68.11	15 52.05	0.277	
Tues.	12	15 8 47.55	10.170	17 39 28.1	40.82	16 12.42	68.23	15 44.97	0.313	
Wed.	13	15 12 52.07	10.205	17 55 38.7	40.05	16 12.64	68.35	15 37.04	0.348	
Thur.	14	15 16 57.44	10.241	18 11 30.7	39.26	16 12.85	68.46	15 28.24	0.384	
Fri.	15	15 21 3.68	10.276	18 27 3.7	38.45	16 13.06	68.58	15 18.58	0.419	
Sat.	16	15 25 10.77	10.312	18 42 17.2	37.63	16 13.26	68.70	15 8.08	0.455	
Sun.	17	15 29 18.72	10.348	18 57 10.8	36.79	16 13.46	68.82	14 56.72	0.490	
Mon.	18	15 33 27.52	10.383	19 11 44.1	35.94	16 13.66	68.93	14 44.50	0.526	
Tues.	19	15 37 37.17	10.418	19 25 56.6	35.07	16 13.85	69.05	14 31.44	0.562	
Wed.	20	15 41 47.67	10.453	19 39 48.2	34.19	16 14.04	69.16	14 17.54	0.597	
Thur.	21	15 45 59.00	10.488	19 53 18.6	33.29	16 14.23	69.27	14 2.81	0.632	
Fri.	22	15 50 11.16	10.522	20 6 27.4	32.38	16 14.41	69.38	13 47.25	0.666	
Sat.	23	15 54 24.13	10.555	20 19 14.0	31.45	16 14.59	69.49	13 30.88	0.699	
Sun.	24	15 58 37.90	10.588	20 31 38.1	30.51	16 14.77	69.59	13 13.70	0.732	
Mon.	25	16 2 52.46	10.621	20 43 39.4	29.55	16 14.95	69.70	12 55.75	0.764	
Tues.	26	16 7 7.78	10.652	20 55 17.5	28.58	16 15.12	69.80	12 37.04	0.795	
Wed.	27	16 11 23.84	10.683	21 6 32.3	27.60	16 15.29	69.90	12 17.59	0.825	
Thur.	28	16 15 40.62	10.712	21 17 23.0	26.60	16 15.46	70.00	11 57.42	0.855	
Fri.	29	16 19 58.11	10.741	21 27 49.5	25.59	16 15.63	70.10	11 36.55	0.883	
Sat.	30	16 24 16.27	10.768	21 37 51.6	24.56	16 15.79	70.19	11 15.00	0.911	
Sun.	31	16 28 35.08	10.794	S. 21° 47' 28.9"	23.52	16 15.95	70.28	10 52.81	0.937	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sidereal Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to Mean Time.	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.			
Fri.	1	^h 14 ^m 24 ^s 55.75	9.794	S.14° 22' 57.5"	48.24	^m 16 ^s 17.27	0.062	^h 14 ^m 41 ^s 13.02
Sat.	2	14 28 51.21	9.827	14 42 8.4	47.65	16 18.36	0.029	14 45 9.57
Sun.	3	14 32 47.45	9.860	15 1 4.9	47.04	16 18.68	0.004	14 49 6.13
Mon.	4	14 36 44.49	9.893	15 19 46.6	46.42	16 18.19	0.037	14 53 2.68
Tues.	5	14 40 42.33	9.926	15 38 13.0	45.77	16 16.91	0.070	14 56 59.24
Wed.	6	14 44 40.98	9.960	15 56 23.7	45.11	16 14.81	0.104	15 0 55.79
Thur.	7	14 48 40.44	9.994	16 14 18.5	44.44	16 11.90	0.138	15 4 52.34
Fri.	8	14 52 40.73	10.029	16 31 56.9	43.75	16 8.17	0.173	15 8 48.90
Sat.	9	14 56 41.84	10.064	16 49 18.5	43.04	16 3.61	0.207	15 12 45.45
Sun.	10	15 0 43.79	10.099	17 6 23.0	42.32	15 58.22	0.242	15 16 42.01
Mon.	11	15 4 46.58	10.134	17 23 9.9	41.58	15 51.98	0.277	15 20 38.56
Tues.	12	15 8 50.22	10.170	17 39 38.7	40.82	15 44.90	0.313	15 24 35.12
Wed.	13	15 12 54.72	10.205	17 55 49.1	40.05	15 36.95	0.348	15 28 31.67
Thur.	14	15 17 0.08	10.241	18 11 40.8	39.26	15 28.15	0.384	15 32 28.23
Fri.	15	15 21 6.30	10.276	18 27 13.5	38.45	15 18.48	0.419	15 36 24.78
Sat.	16	15 25 13.37	10.312	18 42 26.7	37.63	15 7.97	0.455	15 40 21.34
Sun.	17	15 29 21.29	10.348	18 57 20.0	36.79	14 56.60	0.490	15 44 17.89
Mon.	18	15 33 30.07	10.383	19 11 52.9	35.94	14 44.38	0.526	15 48 14.45
Tues.	19	15 37 39.69	10.418	19 26 5.1	35.07	14 31.31	0.562	15 52 11.00
Wed.	20	15 41 50.16	10.453	19 39 56.4	34.19	14 17.40	0.597	15 56 7.56
Thur.	21	15 46 1.46	10.488	19 53 26.5	33.29	14 2.66	0.632	16 0 4.12
Fri.	22	15 50 13.58	10.522	20 6 34.9	32.38	13 47.09	0.666	16 4 0.67
Sat.	23	15 54 26.51	10.555	20 19 21.1	31.45	13 30.72	0.699	16 7 57.23
Sun.	24	15 58 40.24	10.588	20 31 44.8	30.51	13 13.54	0.732	16 11 53.78
Mon.	25	16 2 54.75	10.621	20 43 45.7	29.55	12 55.59	0.764	16 15 50.34
Tues.	26	16 7 10.02	10.652	20 55 23.5	28.58	12 36.87	0.795	16 19 46.89
Wed.	27	16 11 26.03	10.683	21 6 37.9	27.60	12 17.42	0.825	16 23 43.45
Thur.	28	16 15 42.76	10.712	21 17 28.3	26.60	11 57.25	0.855	16 27 40.01
Fri.	29	16 20 0.19	10.741	21 27 54.5	25.59	11 36.37	0.883	16 31 36.56
Sat.	30	16 24 18.29	10.768	21 37 56.2	24.56	11 14.83	0.911	16 35 33.12
Sun.	31	16 28 37.04	10.794	S.21° 47' 33.2"	23.52	10 52.64	0.937	16 39 29.68

NOTE. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Oh.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.				
		λ	λ'						
1	305	218° 37' 17.9	36 42 9	150.27	+0.38	9.9965013	47.4	9 17 15.43	
2	306	219 37 25.1	36 50.0	150.33	0.31	.9963878	47.1	9 13 19.52	
3	307	220 37 33.8	36 58.6	150.40	0.22	.9962751	46.7	9 9 23.62	
4	308	221 37 44.0	37 8.7	150.46	+0.10	.9961633	46.3	9 5 27.71	
5	309	222 37 55.8	37 20.4	150.53	-0.03	.9960526	45.8	9 1 31.81	
6	310	223 38 9.1	37 33.5	150.59	0.16	.9959432	45.2	8 57 35.90	
7	311	224 38 23.9	37 48.2	150.65	0.30	.9958352	44.6	8 53 39.99	
8	312	225 38 40.2	38 4.4	150.71	0.43	.9957288	43.9	8 49 44.08	
9	313	226 38 57.9	38 22.0	150.77	0.54	.9956241	43.2	8 45 48.17	
10	314	227 39 17.2	38 41.2	150.84	0.63	.9955213	42.4	8 41 52.26	
11	315	228 39 38.2	39 2.0	150.90	0.70	.9954203	41.6	8 37 56.35	
12	316	229 40 0.8	39 24.5	150.98	0.74	.9953212	40.8	8 34 0.44	
13	317	230 40 25.1	39 48.7	151.05	0.75	.9952240	40.1	8 30 4.53	
14	318	231 40 51.2	40 14.7	151.13	0.73	.9951288	39.3	8 26 8.62	
15	319	232 41 19.0	40 42.3	151.20	0.69	.9950356	38.5	8 22 12.72	
16	320	233 41 48.6	41 11.7	151.27	0.62	.9949443	37.7	8 18 16.81	
17	321	234 42 20.0	41 43.0	151.34	0.53	.9948548	37.0	8 14 20.90	
18	322	235 42 53.2	42 16.1	151.42	0.41	.9947671	36.2	8 10 24.99	
19	323	236 43 28.2	42 51.0	151.49	0.27	.9946810	35.5	8 6 29.08	
20	324	237 44 4.9	43 27.5	151.57	-0.13	.9945965	34.9	8 2 33.17	
21	325	238 44 43.4	44 5.8	151.64	0.00	.9945135	34.3	7 58 37.26	
22	326	239 45 23.6	44 45.9	151.71	+0.11	.9944317	33.8	7 54 41.35	
23	327	240 46 5.3	45 27.5	151.78	0.21	.9943512	33.3	7 50 45.44	
24	328	241 46 48.6	46 10.6	151.84	0.30	.9942719	32.8	7 46 49.53	
25	329	242 47 33.4	46 55.2	151.90	0.35	.9941935	32.3	7 42 53.62	
26	330	243 48 19.6	47 41.2	151.95	0.37	.9941170	31.7	7 38 57.71	
27	331	244 49 7.1	48 28.6	152.00	0.36	.9940414	31.2	7 35 1.79	
28	332	245 49 55.9	49 17.3	152.05	0.32	.9939668	30.7	7 31 5.88	
29	333	246 50 45.8	50 7.1	152.10	0.25	.9938935	30.2	7 27 9.97	
30	334	247 51 36.7	50 57.8	152.14	0.16	.9938215	29.6	7 23 14.06	
31	335	248 52 28.4	51 49.3	152.18	+0.06	9.9937510	29.0	7 19 18.16	

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.	
1	14 48.9	14 47.8	54 15.5	-0.42	54 11.5	-0.23	3 46.9	1.98	5.0
2	14 47.4	14 47.6	54 9.9	-0.03	54 10.8	+0.18	4 34.2	1.96	6.0
3	14 48.5	14 50.2	54 14.2	+0.39	54 20.3	0.62	5 21.0	1.93	7.0
4	14 52.6	14 55.6	54 29.0	0.83	54 40.2	1.04	6 7.1	1.91	8.0
5	14 59.4	15 3.8	54 54.0	1.25	55 10.2	1.44	6 52.8	1.90	9.0
6	15 8.8	15 14.4	55 28.7	1.62	55 49.2	1.78	7 38.4	1.91	10.0
7	15 20.4	15 26.9	56 11.4	1.91	56 35.1	2.02	8 24.5	1.94	11.0
8	15 33.6	15 40.5	56 59.8	2.09	57 25.1	2.11	9 11.7	2.00	12.0
9	15 47.4	15 54.2	57 50.6	2.10	58 15.5	2.04	10 0.7	2.09	13.0
10	16 0.7	16 6.8	58 39.4	1.93	59 1.8	1.78	10 52.1	2.20	14.0
11	16 12.4	16 17.2	59 22.1	1.58	59 39.8	1.35	11 46.3	2.32	15.0
12	16 21.2	16 24.3	59 54.5	1.09	60 6.0	0.81	12 43.4	2.43	16.0
13	16 26.5	16 27.7	60 14.0	+0.51	60 18.8	+0.22	13 42.8	2.51	17.0
14	16 27.9	16 27.2	60 19.2	-0.07	60 16.6	-0.35	14 43.4	2.52	18.0
15	16 25.6	16 23.3	60 10.9	0.59	60 2.3	0.81	15 43.4	2.47	19.0
16	16 20.3	16 16.8	59 51.3	1.00	59 38.3	1.15	16 41.6	2.37	20.0
17	16 12.8	16 8.5	59 23.6	1.27	59 7.8	1.35	17 37.1	2.25	21.0
18	16 4.0	15 59.3	58 51.2	1.41	58 34.1	1.44	18 29.8	2.14	22.0
19	15 54.6	15 49.8	58 16.7	1.45	57 59.4	1.44	19 20.1	2.05	23.0
20	15 45.1	15 40.5	57 42.2	1.42	57 25.2	1.39	20 8.5	1.99	24.0
21	15 36.0	15 31.6	57 8.7	1.36	56 52.5	1.33	20 55.7	1.96	25.0
22	15 27.4	15 23.2	56 36.8	1.29	56 21.6	1.25	21 42.6	1.95	26.0
23	15 19.2	15 15.3	56 6.8	1.21	55 52.5	1.17	22 29.4	1.96	27.0
24	15 11.5	15 7.9	55 38.7	1.13	55 25.5	1.08	23 16.7	1.98	28.0
25	15 4.5	15 1.2	55 12.8	1.03	55 0.8	0.97	6		29.0
26	14 58.2	14 55.3	54 49.6	0.90	54 39.2	0.82	0 4.5	2.00	0.3
27	14 52.8	14 50.5	54 29.8	0.74	54 21.5	0.64	0 52.7	2.01	1.3
28	14 48.6	14 47.1	54 14.5	0.53	54 8.9	0.40	1 40.8	2.00	2.3
29	14 46.0	14 45.4	54 4.9	-0.26	54 2.6	-0.11	2 28.6	1.98	3.3
30	14 45.3	14 45.7	54 2.2	+0.05	54 3.9	+0.23	3 15.7	1.94	4.3
31	14 46.8	14 48.4	54 7.7	+0.42	54 13.9	+0.62	4 1.8	1.90	5.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 1.					SUNDAY 3.				
0	18 20 48.29	2.0898	S.18 39' 13.5"	0.069	0	20 0 3.42	2.0433	S.16 59' 9.4"	4.026
1	18 22 53.65	2.0890	18 39 6.8	0.155	1	20 2 5.99	2.0438	16 55 5.5	4.103
2	18 24 58.97	2.0883	18 38 54.9	0.241	2	20 4 8.49	2.0443	16 50 57.0	4.180
3	18 27 4.24	2.0875	18 38 37.8	0.327	3	20 6 10.94	2.0403	16 46 43.9	4.256
4	18 29 9.47	2.0867	18 38 15.6	0.413	4	20 8 13.32	2.0392	16 42 26.3	4.332
5	18 31 14.64	2.0858	18 37 48.2	0.499	5	20 10 15.64	2.0382	16 38 4.1	4.408
6	18 33 19.77	2.0851	18 37 15.7	0.585	6	20 12 17.90	2.0371	16 33 37.3	4.483
7	18 35 24.85	2.0843	18 36 38.0	0.671	7	20 14 20.10	2.0361	16 29 6.0	4.558
8	18 37 29.88	2.0834	18 35 55.2	0.757	8	20 16 22.23	2.0351	16 24 30.3	4.633
9	18 39 34.86	2.0825	18 35 7.3	0.842	9	20 18 24.31	2.0342	16 19 50.0	4.708
10	18 41 39.78	2.0817	18 34 14.2	0.927	10	20 20 26.33	2.0332	16 15 5.3	4.783
11	18 43 44.65	2.0808	18 33 16.0	1.012	11	20 22 28.29	2.0322	16 10 16.1	4.857
12	18 45 49.47	2.0799	18 32 12.8	1.097	12	20 24 30.19	2.0312	16 5 22.5	4.931
13	18 47 54.24	2.0790	18 31 4.4	1.182	13	20 26 32.03	2.0303	16 0 24.5	5.004
14	18 49 58.95	2.0781	18 29 51.0	1.267	14	20 28 33.82	2.0293	15 55 22.1	5.077
15	18 52 3.60	2.0771	18 28 32.5	1.351	15	20 30 35.55	2.0284	15 50 15.3	5.150
16	18 54 8.20	2.0762	18 27 8.9	1.435	16	20 32 37.23	2.0275	15 45 4.1	5.222
17	18 56 12.74	2.0753	18 25 40.3	1.519	17	20 34 38.85	2.0266	15 39 48.6	5.294
18	18 58 17.23	2.0743	18 24 6.6	1.603	18	20 36 40.42	2.0257	15 34 28.8	5.366
19	19 0 21.65	2.0733	18 22 27.9	1.687	19	20 38 41.94	2.0248	15 29 4.6	5.438
20	19 2 26.02	2.0723	18 20 44.1	1.771	20	20 40 43.40	2.0239	15 23 36.2	5.509
21	19 4 30.33	2.0713	18 18 55.3	1.855	21	20 42 44.81	2.0231	15 18 3.5	5.580
22	19 6 34.58	2.0704	18 17 1.5	1.938	22	20 44 46.17	2.0222	15 12 26.6	5.651
23	19 8 38.78	2.0694	S.18 15 2.7	2.021	23	20 46 47.48	2.0214	S.15 6 45.4	5.721
SATURDAY 2.					MONDAY 4.				
0	19 10 42.91	2.0684	S.18 12 59.0	2.104	0	20 48 48.74	2.0206	S.15 1 0.0	5.791
1	19 12 46.98	2.0674	18 10 50.3	2.187	1	20 50 49.95	2.0196	14 55 10.4	5.861
2	19 14 50.99	2.0664	18 8 36.6	2.270	2	20 52 51.11	2.0190	14 49 16.7	5.930
3	19 16 54.94	2.0653	18 6 18.0	2.352	3	20 54 52.23	2.0183	14 43 18.8	6.000
4	19 18 58.83	2.0643	18 3 54.4	2.434	4	20 56 53.30	2.0175	14 37 16.8	6.068
5	19 21 2.66	2.0633	18 1 25.9	2.515	5	20 58 54.33	2.0168	14 31 10.7	6.136
6	19 23 6.42	2.0623	17 58 52.6	2.597	6	21 0 55.31	2.0161	14 25 0.5	6.204
7	19 25 10.13	2.0613	17 56 14.3	2.678	7	21 2 56.26	2.0154	14 18 46.3	6.271
8	19 27 13.77	2.0602	17 53 31.2	2.759	8	21 4 57.16	2.0147	14 12 28.0	6.338
9	19 29 17.35	2.0591	17 50 43.2	2.840	9	21 6 58.03	2.0141	14 6 5.7	6.405
10	19 31 20.86	2.0581	17 47 50.4	2.921	10	21 8 58.85	2.0134	13 59 39.4	6.472
11	19 33 24.31	2.0570	17 44 52.8	3.001	11	21 10 59.63	2.0128	13 53 9.1	6.538
12	19 35 27.70	2.0559	17 41 50.3	3.082	12	21 13 0.38	2.0122	13 46 34.8	6.604
13	19 37 31.03	2.0549	17 38 43.0	3.162	13	21 15 1.10	2.0117	13 39 56.6	6.669
14	19 39 34.29	2.0539	17 35 30.9	3.243	14	21 17 1.78	2.0111	13 33 14.5	6.734
15	19 41 37.49	2.0528	17 32 14.1	3.321	15	21 19 2.43	2.0105	13 26 28.5	6.799
16	19 43 40.62	2.0517	17 28 52.5	3.400	16	21 21 3.04	2.0100	13 19 38.6	6.863
17	19 45 43.69	2.0507	17 25 26.1	3.479	17	21 23 3.62	2.0095	13 12 44.9	6.927
18	19 47 46.70	2.0496	17 21 55.0	3.558	18	21 25 4.18	2.0091	13 5 47.4	6.991
19	19 49 49.65	2.0486	17 18 19.1	3.637	19	21 27 4.71	2.0087	12 58 46.0	7.054
20	19 51 52.53	2.0475	17 14 38.5	3.716	20	21 29 5.22	2.0082	12 51 40.9	7.117
21	19 53 55.35	2.0464	17 10 53.2	3.794	21	21 31 5.70	2.0078	12 44 32.0	7.179
22	19 55 58.10	2.0453	17 7 3.2	3.872	22	21 33 6.16	2.0075	12 37 19.4	7.241
23	19 58 0.79	2.0443	17 3 8.6	3.949	23	21 35 6.60	2.0072	12 30 3.0	7.303
24	20 0 3.42	2.0433	S.16 59 9.4	4.026	24	21 37 7.02	2.0069	S.12 22 43.0	7.364

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 5.					THURSDAY 7.				
0	^h 21 ^m 37 ^s 7.02	2.8069	S. 12° 22' 43.0"	7.364	0	^h 23 ^m 13 ^s 39.98	2.0294	S. 5° 26' 53.8"	9.776
1	21 39 7.42	2.0066	12 15 19.3	7.436	1	23 15 41.79	2.0308	5 17 6.2	9.813
2	21 41 7.81	2.0063	12 7 52.0	7.466	2	23 17 43.68	2.0322	5 7 16.3	9.849
3	21 43 8.18	2.0061	12 0 21.1	7.546	3	23 19 45.66	2.0337	4 57 24.3	9.885
4	21 45 8.54	2.0059	11 52 46.5	7.606	4	23 21 47.72	2.0352	4 47 30.2	9.920
5	21 47 8.89	2.0057	11 45 8.4	7.666	5	23 23 49.88	2.0368	4 37 34.0	9.964
6	21 49 9.22	2.0055	11 37 26.7	7.724	6	23 25 52.13	2.0384	4 27 35.7	9.988
7	21 51 9.55	2.0051	11 29 41.6	7.782	7	23 27 54.48	2.0400	4 17 35.3	10.022
8	21 53 9.87	2.0053	11 21 52.9	7.840	8	23 29 56.93	2.0418	4 7 33.0	10.056
9	21 55 10.19	2.0053	11 14 0.8	7.898	9	23 31 59.48	2.0436	3 57 28.7	10.087
10	21 57 10.50	2.0053	11 6 5.2	7.956	10	23 34 2.14	2.0452	3 47 22.6	10.118
11	21 59 10.81	2.0053	10 58 6.2	8.012	11	23 36 4.90	2.0469	3 37 14.6	10.149
12	22 1 11.13	2.0053	10 50 3.8	8.068	12	23 38 7.77	2.0488	3 27 4.7	10.179
13	22 3 11.45	2.0053	10 41 58.0	8.124	13	23 40 10.75	2.0507	3 16 53.1	10.208
14	22 5 11.77	2.0054	10 33 48.9	8.179	14	23 42 13.85	2.0526	3 6 39.7	10.237
15	22 7 12.10	2.0055	10 25 36.5	8.234	15	23 44 17.06	2.0546	2 56 24.6	10.266
16	22 9 12.43	2.0056	10 17 20.8	8.289	16	23 46 20.40	2.0566	2 46 7.8	10.293
17	22 11 12.77	2.0058	10 9 1.8	8.343	17	23 48 23.86	2.0587	2 35 49.4	10.319
18	22 13 13.13	2.0060	10 0 39.6	8.397	18	23 50 27.44	2.0608	2 25 29.5	10.346
19	22 15 13.50	2.0063	9 52 14.1	8.451	19	23 52 31.15	2.0630	2 15 8.0	10.370
20	22 17 13.89	2.0066	9 43 45.5	8.504	20	23 54 35.00	2.0652	2 4 45.1	10.394
21	22 19 14.29	2.0069	9 35 13.7	8.556	21	23 56 38.98	2.0674	1 54 20.7	10.418
22	22 21 14.72	2.0073	9 26 38.3	8.607	22	23 58 43.09	2.0697	1 43 54.9	10.441
23	22 23 15.17	2.0077	S. 9 18 0.8	8.658	23	0 0 47.34	2.0720	S. 1 33 27.8	10.465
WEDNESDAY 6.					FRIDAY 8.				
0	22 25 15.64	2.0081	S. 9 9 19.8	8.709	0	0 2 51.73	2.0744	S. 1 22 59.4	10.484
1	22 27 16.14	2.0086	9 0 35.7	8.759	1	0 4 56.27	2.0768	1 12 29.8	10.504
2	22 29 16.66	2.0090	8 51 48.6	8.809	2	0 7 0.95	2.0793	1 1 58.9	10.524
3	22 31 17.22	2.0096	8 42 58.5	8.859	3	0 9 5.78	2.0818	0 51 26.9	10.543
4	22 33 17.81	2.0102	8 34 5.5	8.908	4	0 11 10.76	2.0843	0 40 53.8	10.561
5	22 35 18.44	2.0108	8 25 9.5	8.957	5	0 13 15.90	2.0869	0 30 19.6	10.578
6	22 37 19.10	2.0114	8 16 10.7	9.006	6	0 15 21.19	2.0896	0 19 44.5	10.594
7	22 39 19.80	2.0120	8 7 9.0	9.052	7	0 17 26.64	2.0923	S. 0 9 8.4	10.609
8	22 41 20.54	2.0127	7 58 4.5	9.098	8	0 19 32.26	2.0950	N. 0 1 28.6	10.623
9	22 43 21.33	2.0135	7 48 57.2	9.144	9	0 21 38.04	2.0978	0 12 6.5	10.637
10	22 45 22.16	2.0143	7 39 47.2	9.190	10	0 23 43.99	2.1006	0 22 45.1	10.650
11	22 47 23.04	2.0152	7 30 34.4	9.236	11	0 25 50.10	2.1033	0 33 24.5	10.662
12	22 49 23.96	2.0160	7 21 18.9	9.281	12	0 27 56.39	2.1062	0 44 4.5	10.673
13	22 51 24.97	2.0169	7 12 0.7	9.326	13	0 30 2.85	2.1092	0 54 45.2	10.683
14	22 53 26.01	2.0178	7 2 39.9	9.369	14	0 32 9.49	2.1123	1 5 26.5	10.692
15	22 55 27.11	2.0186	6 53 16.5	9.412	15	0 34 16.31	2.1153	1 16 8.3	10.701
16	22 57 28.27	2.0196	6 43 50.5	9.456	16	0 36 23.32	2.1183	1 26 50.6	10.708
17	22 59 29.49	2.0209	6 34 22.0	9.497	17	0 38 30.51	2.1214	1 37 33.3	10.716
18	23 1 30.78	2.0220	6 24 50.9	9.538	18	0 40 37.89	2.1246	1 48 16.4	10.720
19	23 3 32.13	2.0231	6 15 17.4	9.579	19	0 42 45.46	2.1278	1 58 59.7	10.724
20	23 5 33.55	2.0243	6 5 41.4	9.619	20	0 44 53.22	2.1310	2 9 43.3	10.728
21	23 7 35.04	2.0255	5 56 3.0	9.659	21	0 47 1.18	2.1343	2 20 27.1	10.731
22	23 9 36.61	2.0268	5 46 22.3	9.698	22	0 49 9.33	2.1376	2 31 11.0	10.733
23	23 11 38.25	2.0281	5 36 39.2	9.737	23	0 51 17.68	2.1409	2 41 55.0	10.733
24	23 13 39.98	2.0294	S. 5 26 53.8	9.776	24	0 53 26.24	2.1443	N. 2 52 39.0	10.733

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 9.					MONDAY 11.				
0	h m s	s	N. 2 52 39.0	10.783	0	h m s	s	N. 11 6 2.1	9.386
1	0 53 26.24	2.1443	3 3 23.0	10.782	1	2 40 56.51	2.8451	11 15 21.8	9.286
2	0 55 35.00	2.1478	3 14 6.8	10.729	2	2 43 17.36	2.8496	11 24 37.9	9.237
3	0 57 43.97	2.1513	3 24 50.4	10.725	3	2 45 38.48	2.8544	11 33 50.2	9.174
4	0 59 53.15	2.1548	3 35 33.8	10.720	4	2 47 59.88	2.8590	11 42 58.8	9.110
5	1 2 2.55	2.1583	3 46 16.9	10.715	5	2 50 21.56	2.8636	11 52 3.5	9.045
6	1 4 12.16	2.1619	3 56 59.6	10.709	6	2 52 43.52	2.8683	12 1 4.2	8.979
7	1 6 21.98	2.1656	4 7 41.9	10.701	7	2 55 5.75	2.8729	12 10 1.0	8.913
8	1 8 32.02	2.1693	4 18 23.6	10.692	8	2 57 28.26	2.8776	12 18 53.6	8.843
9	1 10 42.29	2.1730	4 29 4.8	10.682	9	2 59 51.05	2.8821	12 27 42.0	8.773
10	1 12 52.78	2.1768	4 39 45.4	10.671	10	3 2 14.11	2.8867	12 36 26.2	8.701
11	1 15 3.50	2.1805	4 50 25.3	10.658	11	3 4 37.45	2.8913	12 45 6.1	8.627
12	1 17 14.44	2.1843	5 1 4.4	10.644	12	3 7 1.06	2.8958	12 53 41.5	8.553
13	1 19 25.62	2.1882	5 11 42.7	10.630	13	3 9 24.95	2.9004	13 2 12.4	8.477
14	1 21 37.03	2.1921	5 22 20.1	10.615	14	3 11 49.11	2.9049	13 10 38.7	8.400
15	1 23 48.67	2.1960	5 32 56.5	10.598	15	3 14 13.54	2.9095	13 19 0.3	8.321
16	1 26 0.55	2.2000	5 43 31.9	10.580	16	3 16 38.24	2.9140	13 27 17.2	8.241
17	1 28 12.67	2.2040	5 54 6.2	10.562	17	3 19 3.22	2.9185	13 35 29.2	8.160
18	1 30 25.03	2.2080	6 4 39.3	10.542	18	3 21 28.46	2.9229	13 43 36.4	8.076
19	1 32 37.63	2.2121	6 15 11.2	10.521	19	3 23 53.97	2.9274	13 51 38.6	7.994
20	1 34 50.48	2.2162	6 25 41.8	10.499	20	3 26 19.74	2.9318	13 59 35.7	7.909
21	1 37 3.57	2.2203	6 36 11.0	10.476	21	3 28 45.78	2.9363	14 7 27.7	7.823
22	1 39 16.91	2.2245	6 46 38.8	10.450	22	3 31 12.08	2.9406	14 15 14.4	7.736
23	1 41 30.51	2.2288	N. 6 57 5.0	10.423	23	3 33 38.64	2.9448	N. 14 22 55.9	7.647
24	1 43 44.35	2.2333				3 36 5.46	2.9491		
SUNDAY 10.					TUESDAY 12.				
0	1 45 58.45	2.2371	N. 7 7 29.6	10.395	0	3 38 32.53	2.9534	N. 14 30 32.0	7.557
1	1 48 12.81	2.2414	7 17 52.5	10.367	1	3 40 59.86	2.9576	14 38 2.7	7.465
2	1 50 27.42	2.2457	7 28 13.7	10.338	2	3 43 27.44	2.9618	14 45 27.8	7.372
3	1 52 42.29	2.2500	7 38 33.0	10.307	3	3 45 55.27	2.9659	14 52 47.4	7.279
4	1 54 57.42	2.2544	7 48 50.5	10.275	4	3 48 23.35	2.9700	15 0 1.3	7.184
5	1 57 12.81	2.2588	7 59 6.0	10.241	5	3 50 51.67	2.9741	15 7 9.4	7.088
6	1 59 28.47	2.2631	8 9 19.4	10.206	6	3 53 20.24	2.9781	15 14 11.7	6.991
7	2 1 44.39	2.2675	8 19 30.7	10.170	7	3 55 49.05	2.9821	15 21 8.2	6.893
8	2 4 0.57	2.2719	8 29 39.8	10.132	8	3 58 18.09	2.9860	15 27 58.8	6.794
9	2 6 17.02	2.2764	8 39 46.6	10.093	9	4 0 47.37	2.9899	15 34 43.5	6.693
10	2 8 33.74	2.2809	8 49 51.0	10.053	10	4 3 16.88	2.9937	15 41 22.0	6.591
11	2 10 50.73	2.2854	8 59 53.0	10.013	11	4 5 46.61	2.9974	15 47 54.4	6.487
12	2 13 7.99	2.2899	9 9 52.5	9.971	12	4 8 16.57	2.9911	15 54 20.5	6.382
13	2 15 25.52	2.2944	9 19 49.4	9.926	13	4 10 46.75	2.9948	16 0 40.3	6.277
14	2 17 43.32	2.2990	9 29 43.6	9.881	14	4 13 17.15	2.9984	16 6 53.7	6.171
15	2 20 1.40	2.3035	9 39 35.1	9.835	15	4 15 47.76	2.9919	16 13 0.7	6.063
16	2 22 19.75	2.3082	9 49 23.8	9.787	16	4 18 18.58	2.9954	16 19 1.3	5.954
17	2 24 38.38	2.3128	9 59 9.6	9.738	17	4 20 49.61	2.9989	16 24 55.3	5.843
18	2 26 57.28	2.3174	10 8 52.4	9.688	18	4 23 20.84	2.9923	16 30 42.7	5.734
19	2 29 16.46	2.3219	10 18 32.1	9.636	19	4 25 52.27	2.9958	16 36 23.4	5.623
20	2 31 35.91	2.3265	10 28 8.7	9.583	20	4 28 23.89	2.9993	16 41 57.3	5.509
21	2 33 55.64	2.3312	10 37 42.1	9.529	21	4 30 55.70	2.9918	16 47 24.4	5.393
22	2 36 15.65	2.3358	10 47 12.2	9.473	22	4 33 27.70	2.9948	16 52 44.7	5.260
23	2 38 35.94	2.3405	10 56 38.9	9.416	23	4 35 59.88	2.9978	16 57 58.1	5.165
24	2 40 56.51	2.3451	N. 11 6 2.1	9.358	24	4 38 32.24	2.9908	N. 17 3 4.6	5.049

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 13.					FRIDAY 15.				
0	4 38 32.24	2.5408	N.17° 3' 4.6"	5.049	0	6 42 11.21	2.5744	N.18° 39' 44.4"	1.134
1	4 41 4.78	2.5437	17 8 4.0	4.992	1	6 44 45.63	2.5728	18 38 32.4	1.268
2	4 43 37.48	2.5464	17 12 56.4	4.814	2	6 47 19.94	2.5710	18 37 12.6	1.398
3	4 46 10.35	2.5491	17 17 41.7	4.695	3	6 49 54.14	2.5691	18 35 45.0	1.528
4	4 48 43.37	2.5517	17 22 19.8	4.576	4	6 52 28.23	2.5672	18 34 9.6	1.654
5	4 51 16.55	2.5543	17 26 50.7	4.484	5	6 55 2.20	2.5652	18 32 26.5	1.783
6	4 53 49.88	2.5567	17 31 14.3	4.383	6	6 57 36.05	2.5630	18 30 35.6	1.911
7	4 56 23.35	2.5590	17 35 30.6	4.211	7	7 0 9.77	2.5608	18 28 37.1	2.039
8	4 58 56.96	2.5613	17 39 39.6	4.088	8	7 2 43.35	2.5586	18 26 30.9	2.166
9	5 1 30.70	2.5635	17 43 41.2	3.964	9	7 5 16.80	2.5563	18 24 17.1	2.293
10	5 4 4.58	2.5656	17 47 35.3	3.839	10	7 7 50.10	2.5538	18 21 55.7	2.420
11	5 6 38.58	2.5677	17 51 22.0	3.715	11	7 10 23.25	2.5513	18 19 26.7	2.548
12	5 9 12.70	2.5698	17 55 1.2	3.590	12	7 12 56.25	2.5487	18 16 50.2	2.671
13	5 11 46.93	2.5713	17 58 32.8	3.464	13	7 15 29.09	2.5460	18 14 6.2	2.798
14	5 14 21.27	2.5731	18 1 56.9	3.337	14	7 18 1.77	2.5432	18 11 14.7	2.926
15	5 16 55.71	2.5748	18 5 13.3	3.209	15	7 20 34.28	2.5403	18 8 15.8	3.043
16	5 19 30.25	2.5763	18 8 22.0	3.081	16	7 23 6.61	2.5374	18 5 9.5	3.166
17	5 22 4.88	2.5778	18 11 23.0	2.958	17	7 25 38.77	2.5344	18 1 55.9	3.288
18	5 24 39.59	2.5791	18 14 16.3	2.834	18	7 28 10.74	2.5314	17 58 35.0	3.408
19	5 27 14.38	2.5804	18 17 1.9	2.708	19	7 30 42.53	2.5283	17 55 6.8	3.530
20	5 29 49.24	2.5816	18 19 39.7	2.585	20	7 33 14.13	2.5251	17 51 31.4	3.656
21	5 32 24.17	2.5828	18 22 9.7	2.458	21	7 35 45.54	2.5218	17 47 48.8	3.780
22	5 34 59.17	2.5837	18 24 31.9	2.304	22	7 38 16.75	2.5185	17 43 59.1	3.887
23	5 37 34.22	2.5845	N.18 26 46.2	2.173	23	7 40 47.76	2.5151	N.17 40 2.4	4.004
THURSDAY 14.					SATURDAY 16.				
0	5 40 9.32	2.5864	N.18 28 52.7	2.043	0	7 43 18.56	2.5117	N.17 35 58.6	4.121
1	5 42 44.47	2.5881	18 30 51.3	1.911	1	7 45 49.16	2.5082	17 31 47.9	4.237
2	5 45 19.65	2.5897	18 32 42.0	1.779	2	7 48 19.54	2.5046	17 27 30.2	4.353
3	5 47 54.87	2.5913	18 34 24.8	1.647	3	7 50 49.70	2.5009	17 23 5.6	4.469
4	5 50 30.11	2.5929	18 35 59.6	1.515	4	7 53 19.65	2.4973	17 18 34.3	4.579
5	5 53 5.37	2.5948	18 37 26.5	1.382	5	7 55 49.38	2.4936	17 13 56.2	4.691
6	5 55 40.65	2.5960	18 38 45.4	1.250	6	7 58 18.88	2.4898	17 9 11.4	4.802
7	5 58 15.93	2.5981	18 39 56.4	1.117	7	8 0 48.15	2.4860	17 4 20.0	4.913
8	6 0 51.22	2.5981	18 40 59.4	0.984	8	8 3 17.19	2.4821	16 59 21.9	5.022
9	6 3 26.51	2.5980	18 41 54.4	0.851	9	8 5 46.00	2.4782	16 54 17.3	5.130
10	6 6 1.78	2.5977	18 42 41.5	0.718	10	8 8 14.57	2.4742	16 49 6.3	5.238
11	6 8 37.04	2.5974	18 43 20.6	0.585	11	8 10 42.90	2.4702	16 43 48.8	5.345
12	6 11 12.27	2.5970	18 43 51.7	0.452	12	8 13 10.99	2.4662	16 38 24.9	5.451
13	6 13 47.48	2.5965	18 44 14.8	0.319	13	8 15 38.84	2.4621	16 32 54.7	5.558
14	6 16 22.65	2.5959	18 44 30.0	0.186	14	8 18 6.44	2.4580	16 27 18.3	5.665
15	6 18 57.78	2.5953	18 44 37.2	0.053	15	8 20 33.79	2.4538	16 21 35.7	5.769
16	6 21 32.87	2.5943	18 44 36.4	0.080	16	8 23 0.89	2.4496	16 15 46.9	5.864
17	6 24 7.90	2.5934	18 44 27.6	0.210	17	8 25 27.74	2.4454	16 9 52.1	5.954
18	6 26 42.88	2.5924	18 44 10.9	0.345	18	8 27 54.34	2.4412	16 3 51.2	6.044
19	6 29 17.79	2.5913	18 43 46.3	0.479	19	8 30 20.68	2.4369	15 57 44.4	6.133
20	6 31 52.64	2.5901	18 43 13.7	0.609	20	8 32 46.77	2.4323	15 51 31.6	6.261
21	6 34 27.41	2.5783	18 42 33.2	0.741	21	8 35 12.60	2.4283	15 45 13.0	6.388
22	6 37 2.10	2.5774	18 41 44.8	0.873	22	8 37 38.16	2.4240	15 38 48.7	6.484
23	6 39 36.70	2.5769	18 40 48.5	1.003	23	8 40 3.47	2.4196	15 32 18.7	6.548
24	6 42 11.21	2.5744	N.18 39 44.4	1.134	24	8 42 28.51	2.4162	N.15 25 43.1	6.541

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 17.					TUESDAY 19.				
0	8 42 28.51	2.4102	N. 15° 25' 43.1	6.641	0	10 33 20.83	2.2105	N. 8° 40' 33.6	9.815
1	8 44 53.20	2.4108	15 19 1.9	6.733	1	10 35 33.35	2.2068	8 30 43.5	9.865
2	8 47 17.80	2.4064	15 12 15.2	6.823	2	10 37 45.64	2.2031	8 20 51.0	9.894
3	8 49 42.05	2.4019	15 5 23.1	6.913	3	10 39 57.71	2.1994	8 10 56.3	9.921
4	8 52 6.03	2.3975	14 58 25.6	7.002	4	10 42 9.57	2.1959	8 0 59.3	9.967
5	8 54 29.74	2.3930	14 51 22.8	7.090	5	10 44 21.22	2.1924	7 51 0.2	10.003
6	8 56 53.19	2.3886	14 44 14.8	7.177	6	10 46 32.66	2.1889	7 40 59.0	10.037
7	8 59 16.37	2.3841	14 37 1.6	7.262	7	10 48 43.89	2.1854	7 30 55.8	10.069
8	9 1 39.28	2.3796	14 29 43.3	7.346	8	10 50 54.91	2.1820	7 20 50.7	10.101
9	9 4 1.92	2.3751	14 22 19.9	7.430	9	10 53 5.73	2.1787	7 10 43.7	10.133
10	9 6 24.29	2.3706	14 14 51.6	7.513	10	10 55 16.35	2.1754	7 0 34.8	10.163
11	9 8 46.39	2.3662	14 7 18.4	7.594	11	10 57 26.77	2.1721	6 50 24.2	10.192
12	9 11 8.23	2.3617	13 59 40.3	7.674	12	10 59 37.00	2.1689	6 40 11.8	10.220
13	9 13 29.79	2.3573	13 51 57.4	7.753	13	11 1 47.04	2.1657	6 29 57.8	10.247
14	9 15 51.09	2.3527	13 44 9.9	7.831	14	11 3 56.88	2.1625	6 19 42.3	10.273
15	9 18 12.12	2.3483	13 36 17.7	7.908	15	11 6 6.53	2.1593	6 9 25.2	10.298
16	9 20 32.88	2.3438	13 28 21.0	7.984	16	11 8 16.00	2.1563	5 59 6.6	10.323
17	9 22 53.37	2.3393	13 20 19.8	8.058	17	11 10 25.28	2.1533	5 48 46.6	10.347
18	9 25 13.59	2.3348	13 12 14.1	8.131	18	11 12 34.39	2.1503	5 38 25.2	10.369
19	9 27 33.55	2.3304	13 4 4.1	8.203	19	11 14 43.32	2.1474	5 28 2.4	10.390
20	9 29 53.24	2.3259	12 55 49.7	8.274	20	11 16 52.08	2.1445	5 17 38.4	10.411
21	9 32 12.66	2.3215	12 47 31.1	8.344	21	11 19 0.67	2.1417	5 7 13.2	10.430
22	9 34 31.82	2.3171	12 39 8.4	8.413	22	11 21 9.08	2.1389	4 56 46.8	10.448
23	9 36 50.72	2.3128	N. 12° 30' 41.6	8.481	23	11 23 17.33	2.1361	N. 4° 46' 19.4	10.465
MONDAY 18.					WEDNESDAY 20.				
0	9 39 9.35	2.3083	N. 12° 22' 10.7	8.547	0	11 25 25.41	2.1334	N. 4° 35' 51.0	10.481
1	9 41 27.72	2.3039	12 13 35.9	8.613	1	11 27 33.33	2.1306	4 25 21.6	10.497
2	9 43 45.82	2.2996	12 4 57.2	8.676	2	11 29 41.10	2.1282	4 14 51.4	10.511
3	9 46 3.66	2.2953	11 56 14.6	8.740	3	11 31 48.71	2.1256	4 4 20.3	10.524
4	9 48 21.25	2.2910	11 47 28.3	8.803	4	11 33 56.17	2.1230	3 53 48.5	10.536
5	9 50 38.58	2.2867	11 38 38.3	8.864	5	11 36 3.47	2.1205	3 43 15.9	10.548
6	9 52 55.65	2.2824	11 29 44.6	8.924	6	11 38 10.63	2.1181	3 32 42.7	10.559
7	9 55 12.46	2.2781	11 20 47.4	8.984	7	11 40 17.65	2.1158	3 22 8.8	10.570
8	9 57 29.02	2.2739	11 11 46.7	9.041	8	11 42 24.52	2.1134	3 11 34.3	10.579
9	9 59 45.33	2.2697	11 2 42.6	9.097	9	11 44 31.25	2.1111	3 0 59.3	10.587
10	10 2 1.38	2.2655	10 53 35.1	9.153	10	11 46 37.85	2.1089	2 50 23.9	10.594
11	10 4 17.19	2.2614	10 44 24.3	9.208	11	11 48 44.32	2.1067	2 39 48.1	10.600
12	10 6 32.75	2.2573	10 35 10.2	9.261	12	11 50 50.65	2.1045	2 29 11.9	10.606
13	10 8 48.06	2.2532	10 25 53.0	9.313	13	11 52 56.86	2.1024	2 18 35.4	10.610
14	10 11 3.13	2.2492	10 16 32.7	9.364	14	11 55 2.94	2.1003	2 7 58.7	10.614
15	10 13 17.96	2.2452	10 7 9.4	9.413	15	11 57 8.90	2.0983	1 57 21.8	10.617
16	10 15 32.55	2.2413	9 57 43.2	9.463	16	11 59 14.74	2.0963	1 46 44.7	10.619
17	10 17 46.90	2.2373	9 48 14.0	9.510	17	12 1 20.46	2.0944	1 36 7.5	10.619
18	10 20 1.01	2.2332	9 38 42.0	9.557	18	12 3 26.07	2.0926	1 25 30.4	10.619
19	10 22 14.89	2.2293	9 29 7.2	9.603	19	12 5 31.57	2.0908	1 14 53.3	10.618
20	10 24 28.53	2.2255	9 19 29.6	9.648	20	12 7 36.96	2.0890	1 4 16.2	10.617
21	10 26 41.94	2.2217	9 9 49.4	9.692	21	12 9 42.24	2.0872	0 53 39.3	10.614
22	10 28 55.13	2.2179	9 0 6.6	9.734	22	12 11 47.42	2.0855	0 43 2.5	10.610
23	10 31 8.09	2.2142	8 50 21.3	9.775	23	12 13 52.50	2.0838	0 32 26.0	10.606
24	10 33 20.83	2.2105	N. 8° 40' 33.6	9.815	24	12 15 57.48	2.0822	N. 0° 21' 49.8	10.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
THURSDAY 21.					SATURDAY 23.				
0	12 15 57.48	2.0822	N. 0 21' 49.8	10.601	0	13 54 50.90	2.0826	S. 7 45' 43.1	9.417
1	12 18 2.37	2.0807	0 11' 13.9	10.598	1	13 56 54.06	2.0826	7 55' 6.8	9.374
2	12 20 7.16	2.0792	N. 0 0' 38.4	10.598	2	13 58 57.24	2.0831	8 4' 28.0	9.330
3	12 22 11.86	2.0777	S. 0 9' 56.6	10.590	3	14 1 0.44	2.0834	8 13' 46.5	9.286
4	12 24 16.48	2.0762	0 20' 31.2	10.572	4	14 3 3.65	2.0837	8 23' 2.3	9.241
5	12 26 21.01	2.0748	0 31' 5.2	10.563	5	14 5 6.88	2.0840	8 32' 15.4	9.196
6	12 28 25.46	2.0733	0 41' 38.7	10.563	6	14 7 10.13	2.0843	8 41' 25.7	9.149
7	12 30 29.83	2.0723	0 52' 11.5	10.542	7	14 9 13.40	2.0847	8 50' 33.3	9.102
8	12 32 34.13	2.0710	1 2' 43.7	10.530	8	14 11 16.69	2.0851	8 59' 38.0	9.054
9	12 34 38.35	2.0698	1 13' 15.1	10.517	9	14 13 20.01	2.0855	9 8' 39.8	9.006
10	12 36 42.50	2.0686	1 23' 45.8	10.503	10	14 15 23.35	2.0860	9 17' 38.7	8.957
11	12 38 46.58	2.0676	1 34' 15.6	10.489	11	14 17 26.72	2.0864	9 26' 34.6	8.908
12	12 40 50.60	2.0664	1 44' 44.6	10.474	12	14 19 30.12	2.0869	9 35' 27.6	8.858
13	12 42 54.55	2.0653	1 55' 12.6	10.458	13	14 21 33.55	2.0874	9 44' 17.5	8.807
14	12 44 58.44	2.0643	2 5' 39.6	10.441	14	14 23 37.01	2.0879	9 53' 4.3	8.756
15	12 47 2.27	2.0633	2 16' 5.6	10.424	15	14 25 40.50	2.0884	10 1' 48.0	8.703
16	12 49 6.04	2.0624	2 26' 30.5	10.406	16	14 27 44.02	2.0890	10 10' 28.6	8.650
17	12 51 9.76	2.0616	2 36' 54.3	10.387	17	14 29 47.58	2.0896	10 19' 6.0	8.596
18	12 53 13.43	2.0608	2 47' 16.9	10.367	18	14 31 51.17	2.0902	10 27' 40.1	8.542
19	12 55 17.05	2.0600	2 57' 38.3	10.347	19	14 33 54.80	2.0908	10 36' 11.0	8.487
20	12 57 20.63	2.0592	3 7' 58.5	10.325	20	14 35 58.46	2.0914	10 44' 38.5	8.431
21	12 59 24.16	2.0585	3 18' 17.3	10.303	21	14 38 2.17	2.0921	10 53' 2.7	8.376
22	13 1 27.65	2.0578	3 28' 34.8	10.280	22	14 40 5.91	2.0927	11 1' 23.5	8.318
23	13 3 31.10	2.0572	S. 3 38' 50.9	10.256	23	14 42 9.69	2.0933	S. 11 9' 40.9	8.261
FRIDAY 22.					SUNDAY 24.				
0	13 5 34.51	2.0566	S. 3 49' 5.5	10.231	0	14 44 13.51	2.0940	S. 11 17' 54.9	8.208
1	13 7 37.89	2.0560	3 59' 18.6	10.206	1	14 46 17.37	2.0948	11 26' 5.4	8.145
2	13 9 41.23	2.0556	4 9' 30.2	10.180	2	14 48 21.28	2.0954	11 34' 12.3	8.086
3	13 11 44.54	2.0550	4 19' 40.2	10.153	3	14 50 25.22	2.0961	11 42' 15.6	8.026
4	13 13 47.83	2.0546	4 29' 48.5	10.125	4	14 52 29.21	2.0969	11 50' 15.4	7.966
5	13 15 51.09	2.0542	4 39' 55.2	10.097	5	14 54 33.24	2.0976	11 58' 11.5	7.905
6	13 17 54.33	2.0538	4 50' 0.1	10.068	6	14 56 37.32	2.0984	12 6' 4.0	7.843
7	13 19 57.54	2.0534	5 0' 3.3	10.038	7	14 58 41.44	2.0991	12 13' 52.7	7.781
8	13 22 0.74	2.0531	5 10' 4.7	10.007	8	15 0 45.61	2.0998	12 21' 37.7	7.718
9	13 24 3.92	2.0529	5 20' 4.2	9.976	9	15 2 49.82	2.0706	12 29' 18.9	7.655
10	13 26 7.09	2.0526	5 30' 1.8	9.944	10	15 4 54.08	2.0713	12 36' 56.3	7.592
11	13 28 10.24	2.0524	5 39' 57.4	9.911	11	15 6 58.38	2.0721	12 44' 29.9	7.528
12	13 30 13.38	2.0523	5 49' 51.1	9.877	12	15 9 2.73	2.0729	12 51' 59.6	7.463
13	13 32 16.51	2.0522	5 59' 42.7	9.843	13	15 11 7.13	2.0737	12 59' 25.4	7.398
14	13 34 19.64	2.0520	6 9' 32.2	9.808	14	15 13 11.57	2.0745	13 6' 47.3	7.331
15	13 36 22.76	2.0519	6 19' 19.6	9.772	15	15 15 16.07	2.0753	13 14' 5.2	7.264
16	13 38 25.87	2.0519	6 29' 4.8	9.735	16	15 17 20.61	2.0761	13 21' 19.0	7.197
17	13 40 28.98	2.0519	6 38' 47.8	9.698	17	15 19 25.20	2.0769	13 28' 28.8	7.130
18	13 42 32.10	2.0519	6 48' 28.5	9.660	18	15 21 29.84	2.0777	13 35' 34.6	7.062
19	13 44 35.22	2.0520	6 58' 6.9	9.621	19	15 23 34.53	2.0785	13 42' 36.2	6.993
20	13 46 38.34	2.0521	7 7' 43.0	9.582	20	15 25 39.26	2.0793	13 49' 33.7	6.924
21	13 48 41.47	2.0522	7 17' 16.7	9.542	21	15 27 44.04	2.0801	13 56' 27.0	6.854
22	13 50 44.60	2.0523	7 26' 48.0	9.501	22	15 29 48.87	2.0809	14 3' 16.2	6.784
23	13 52 47.74	2.0525	7 36' 16.8	9.459	23	15 31 53.75	2.0818	14 10' 1.1	6.713
24	13 54 50.90	2.0526	S. 7 45' 43.1	9.417	24	15 33 58.68	2.0826	S. 14 16' 41.8	6.642

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 25.					WEDNESDAY 27.				
0	15 33 58.68	2.0838	S.14° 16' 41.8"	6.542	0	17 14 41.23	2.1077	S.18° 5' 51.3"	2.793
1	15 36 3.66	2.0833	14 23 18.2	6.571	1	17 16 47.69	2.1077	18 8 35.6	2.806
2	15 38 8.48	2.0841	14 29 50.3	6.499	2	17 18 54.15	2.1078	18 11 14.7	2.808
3	15 40 13.75	2.0849	14 36 18.0	6.426	3	17 21 0.62	2.1078	18 13 48.6	2.821
4	15 42 18.87	2.0857	14 42 41.4	6.353	4	17 23 7.08	2.1078	18 16 17.2	2.834
5	15 44 24.04	2.0866	14 49 0.4	6.280	5	17 25 13.54	2.1077	18 18 40.6	2.847
6	15 46 29.25	2.0873	14 55 15.0	6.206	6	17 27 20.00	2.1076	18 20 58.8	2.859
7	15 48 34.51	2.0881	15 1 25.1	6.132	7	17 29 26.45	2.1074	18 23 11.7	2.171
8	15 50 39.82	2.0889	15 7 30.8	6.057	8	17 31 32.89	2.1073	18 25 19.3	2.084
9	15 52 45.17	2.0896	15 13 32.0	5.982	9	17 33 39.32	2.1072	18 27 21.7	1.996
10	15 54 50.57	2.0904	15 19 28.6	5.906	10	17 35 45.75	2.1070	18 29 18.8	1.909
11	15 56 56.01	2.0911	15 25 20.7	5.830	11	17 37 52.17	2.1068	18 31 10.7	1.821
12	15 59 1.50	2.0918	15 31 8.2	5.753	12	17 39 58.57	2.1066	18 32 57.3	1.733
13	16 1 7.03	2.0926	15 36 51.1	5.676	13	17 42 4.96	2.1063	18 34 38.6	1.645
14	16 3 12.60	2.0932	15 42 29.3	5.599	14	17 44 11.33	2.1061	18 36 14.7	1.557
15	16 5 18.21	2.0939	15 48 2.9	5.521	15	17 46 17.68	2.1058	18 37 45.4	1.468
16	16 7 23.87	2.0946	15 53 31.9	5.443	16	17 48 24.02	2.1056	18 39 10.9	1.380
17	16 9 29.57	2.0953	15 58 56.1	5.364	17	17 50 30.34	2.1054	18 40 31.0	1.292
18	16 11 35.31	2.0960	16 4 15.6	5.286	18	17 52 36.63	2.1047	18 41 45.9	1.204
19	16 13 41.09	2.0966	16 9 30.4	5.207	19	17 54 42.90	2.1043	18 42 55.5	1.116
20	16 15 46.90	2.0972	16 14 40.4	5.128	20	17 56 49.14	2.1039	18 43 59.8	1.028
21	16 17 52.75	2.0978	16 19 45.7	5.048	21	17 58 55.35	2.1033	18 44 58.8	0.939
22	16 19 58.64	2.0985	16 24 46.1	4.967	22	18 1 1.54	2.1030	18 45 52.5	0.851
23	16 22 4.57	2.0991	S.16° 29' 41.7"	4.886	23	18 3 7.70	2.1028	S.18° 46' 40.9"	0.763
TUESDAY 26.					THURSDAY 28.				
0	16 24 10.53	2.0997	S.16° 34' 32.4"	4.805	0	18 5 13.82	2.1016	S.18° 47' 24.1"	0.675
1	16 26 16.53	2.1003	16 39 18.3	4.734	1	18 7 19.91	2.1013	18 48 2.0	0.587
2	16 28 22.56	2.1008	16 43 59.3	4.662	2	18 9 25.97	2.1007	18 48 34.6	0.499
3	16 30 28.62	2.1013	16 48 35.4	4.590	3	18 11 31.99	2.1000	18 49 1.9	0.412
4	16 32 34.71	2.1018	16 53 6.5	4.478	4	18 13 37.97	2.0994	18 49 24.0	0.324
5	16 34 40.83	2.1023	16 57 32.7	4.395	5	18 15 43.92	2.0988	18 49 40.8	0.236
6	16 36 46.98	2.1028	17 1 54.0	4.312	6	18 17 49.82	2.0981	18 49 52.3	0.148
7	16 38 53.16	2.1032	17 6 10.2	4.229	7	18 19 55.68	2.0973	18 49 58.6	0.061
8	16 40 59.36	2.1035	17 10 21.5	4.146	8	18 22 1.49	2.0966	18 49 59.6	0.077
9	16 43 5.59	2.1040	17 14 27.7	4.062	9	18 24 7.26	2.0958	18 49 55.4	0.114
10	16 45 11.84	2.1044	17 18 29.0	3.979	10	18 26 12.98	2.0950	18 49 45.9	0.201
11	16 47 18.12	2.1048	17 22 25.2	3.896	11	18 28 18.65	2.0943	18 49 31.2	0.288
12	16 49 24.42	2.1052	17 26 16.4	3.811	12	18 30 24.28	2.0934	18 49 11.3	0.375
13	16 51 30.74	2.1056	17 30 2.5	3.726	13	18 32 29.86	2.0926	18 48 46.2	0.462
14	16 53 37.08	2.1060	17 33 43.5	3.641	14	18 34 35.38	2.0918	18 48 15.8	0.549
15	16 55 43.44	2.1064	17 37 19.4	3.556	15	18 36 40.85	2.0907	18 47 40.3	0.636
16	16 57 49.81	2.1068	17 40 50.2	3.471	16	18 38 46.26	2.0898	18 46 59.5	0.723
17	16 59 56.20	2.1066	17 44 15.9	3.385	17	18 40 51.62	2.0888	18 46 13.5	0.809
18	17 2 2.60	2.1068	17 47 36.4	3.300	18	18 42 56.92	2.0879	18 45 22.4	0.896
19	17 4 9.01	2.1070	17 50 51.8	3.214	19	18 45 2.17	2.0869	18 44 26.1	0.982
20	17 6 15.44	2.1072	17 54 2.1	3.128	20	18 47 7.35	2.0859	18 43 24.6	1.068
21	17 8 21.88	2.1073	17 57 7.2	3.042	21	18 49 12.47	2.0848	18 42 18.0	1.153
22	17 10 28.32	2.1075	18 0 7.1	2.956	22	18 51 17.53	2.0838	18 41 6.2	1.239
23	17 12 34.77	2.1076	18 3 1.8	2.869	23	18 53 22.53	2.0828	18 39 49.3	1.324
24	17 14 41.23	2.1077	S.18° 5' 51.3"	2.782	24	18 55 27.46	2.0817	S.18° 38' 27.2"	1.410

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 29.					SATURDAY 30.				
0	18 55 27.46	2.0817	S.18 38 27.2	1.410	0	19 45 3.78	2.0509	S.17 40 36.8	3.386
1	18 57 32.33	2.0806	18 37 0.0	1.406	1	19 47 6.79	2.0495	17 37 11.3	3.405
2	18 59 37.13	2.0795	18 35 27.8	1.400	2	19 49 9.79	2.0481	17 33 41.0	3.544
3	19 1 41.86	2.0783	18 33 50.5	1.394	3	19 51 12.56	2.0468	17 30 6.1	3.693
4	19 3 46.52	2.0771	18 32 8.1	1.749	4	19 53 15.31	2.0453	17 26 26.4	3.700
5	19 5 51.11	2.0759	18 30 20.7	1.583	5	19 55 17.98	2.0439	17 22 42.1	3.778
6	19 7 55.63	2.0747	18 28 28.2	1.917	6	19 57 20.56	2.0424	17 18 53.1	3.856
7	19 10 0.08	2.0735	18 26 30.7	2.001	7	19 59 23.06	2.0409	17 14 59.5	3.933
8	19 12 4.45	2.0723	18 24 28.1	2.086	8	20 1 25.47	2.0395	17 11 1.2	4.010
9	19 14 8.75	2.0710	18 22 20.5	2.168	9	20 3 27.79	2.0380	17 6 58.3	4.086
10	19 16 12.97	2.0698	18 20 8.0	2.251	10	20 5 30.03	2.0366	17 2 50.9	4.162
11	19 18 17.12	2.0685	18 17 50.5	2.333	11	20 7 32.18	2.0352	16 58 39.0	4.237
12	19 20 21.19	2.0673	18 15 28.0	2.416	12	20 9 34.25	2.0338	16 54 22.5	4.313
13	19 22 25.18	2.0660	18 13 0.6	2.499	13	20 11 36.23	2.0323	16 50 1.5	4.388
14	19 24 29.10	2.0646	18 10 28.2	2.580	14	20 13 38.12	2.0308	16 45 36.0	4.463
15	19 26 32.94	2.0633	18 7 50.9	2.663	15	20 15 39.92	2.0293	16 41 6.0	4.537
16	19 28 36.69	2.0620	18 5 8.7	2.744	16	20 17 41.64	2.0279	16 36 31.6	4.611
17	19 30 40.37	2.0606	18 2 21.6	2.825	17	20 19 43.27	2.0264	16 31 52.8	4.684
18	19 32 43.96	2.0593	17 59 29.7	2.906	18	20 21 44.82	2.0251	16 27 9.5	4.757
19	19 34 47.47	2.0578	17 56 32.9	2.987	19	20 23 46.28	2.0236	16 22 21.8	4.830
20	19 36 50.90	2.0564	17 53 31.3	3.067	20	20 25 47.65	2.0222	16 17 29.8	4.903
21	19 38 54.25	2.0551	17 50 24.9	3.147	21	20 27 48.94	2.0208	16 12 33.5	4.976
22	19 40 57.51	2.0537	17 47 13.6	3.227	22	20 29 50.14	2.0194	16 7 32.8	5.047
23	19 43 0.69	2.0523	17 43 57.6	3.306	23	20 31 51.26	2.0179	16 2 27.8	5.119
24	19 45 3.78	2.0509	S.17 40 36.8	3.386	24	20 33 52.29	2.0165	S.15 57 18.5	5.190

PHASES OF THE MOON.

☾ First Quarter,	d	h	m
○ Full Moon,	11	13	9.7
☾ Last Quarter,	18	5	5.9
● New Moon,	25	17	10.9

☾ Apogee,	d	h
☾ Perigee,	13	20.9
☾ Apogee,	29	20.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
1	SUN W.	56° 27' 25"	3455	57° 48' 39"	3460	59° 9' 48"	3463	60° 30' 53"	3466
	Jupiter E.	53 7 11	3073	51 38 28	3078	50 9 51	3083	48 41 19	3086
	Fomalhaut E.	61 34 35	3496	60 14 6	3513	58 53 56	3531	57 34 6	3550
	α Pegasi E.	75 54 27	3351	74 31 14	3369	73 8 11	3367	71 45 17	3376
	α Arietis E.	119 18 30	3228	117 52 54	3226	116 27 18	3227	115 1 41	3225
2	SUN W.	67 15 35	3476	68 36 26	3477	69 57 16	3477	71 18 6	3477
	Jupiter E.	41 19 38	3098	39 51 26	3100	38 23 16	3101	36 55 7	3101
	Fomalhaut E.	51 0 28	3661	49 42 59	3686	48 25 59	3716	47 9 29	3747
	α Pegasi E.	64 53 17	3421	63 31 24	3430	62 9 41	3440	60 48 10	3461
	α Arietis E.	107 53 23	3221	106 27 39	3220	105 1 54	3219	103 36 7	3216
3	SUN W.	78 2 34	3496	79 23 36	3493	80 44 41	3489	82 5 51	3485
	Jupiter E.	29 34 24	3099	28 6 14	3096	26 38 2	3096	25 9 49	3096
	Fomalhaut E.	40 56 7	3951	39 43 39	4006	38 32 4	4066	37 21 28	4131
	α Pegasi E.	54 3 42	3511	52 43 30	3523	51 23 35	3542	50 3 57	3566
	α Arietis E.	96 26 28	3303	95 0 22	3199	93 34 11	3194	92 7 55	3190
4	Aldebaran E.	129 26 16	3069	127 57 28	3066	126 28 37	3063	124 59 42	3066
	SUN W.	88 53 6	3424	90 14 55	3416	91 36 53	3408	92 59 0	3400
	Fomalhaut E.	31 47 4	4616	30 44 55	4762	29 44 47	4926	28 46 53	5115
	α Pegasi E.	43 31 6	3674	42 13 51	3706	40 57 9	3740	39 41 4	3779
	α Arietis E.	84 55 9	3163	83 28 16	3167	82 1 15	3160	80 34 6	3144
5	Aldebaran E.	117 33 35	3030	116 4 0	3023	114 34 16	3016	113 4 22	3008
	SUN W.	99 52 11	3350	101 15 25	3336	102 38 53	3326	104 2 34	3313
	α Aquilæ W.	34 58 11	4774	35 58 9	4823	37 0 14	4897	38 4 9	4977
	α Pegasi E.	33 32 49	4076	32 22 23	4163	31 13 21	4264	30 5 55	4381
	α Arietis E.	73 16 14	3105	71 48 11	3097	70 19 58	3089	68 51 35	3081
6	Aldebaran E.	105 32 13	2961	104 1 11	2960	102 29 55	2959	100 58 25	2957
	SUN W.	111 4 46	3246	112 30 1	3231	113 55 33	3216	115 21 23	3201
	α Aquilæ W.	43 48 0	3924	45 0 55	3966	46 15 0	3791	47 30 12	3736
	α Arietis E.	61 27 4	3036	59 57 38	3030	58 28 2	3023	56 58 16	3014
	Aldebaran E.	93 17 4	2863	91 43 58	2849	90 10 34	2836	88 36 51	2821
7	SUN W.	122 35 13	3120	124 2 58	3104	125 31 3	3087	126 59 28	3070
	α Aquilæ W.	54 1 21	3471	55 22 17	3427	56 44 3	3396	58 6 36	3346
	Jupiter W.	19 13 43	2792	20 48 22	2773	22 23 25	2763	23 58 54	2736
	α Arietis E.	49 27 12	2982	47 56 37	2979	46 25 58	2977	44 55 16	2975
	Aldebaran E.	80 43 28	2744	79 7 46	2728	77 31 43	2711	75 55 18	2699
8	Pollux E.	123 57 59	2652	122 24 39	2631	120 50 52	2611	119 16 39	2593
	α Aquilæ W.	65 10 9	3173	66 36 51	3141	68 4 11	3111	69 32 7	3083
	Fomalhaut W.	33 39 58	3671	34 53 47	3763	36 9 38	3846	37 27 21	3923
	Jupiter W.	32 2 30	2642	33 40 28	2624	35 18 51	2606	36 57 38	2588
	α Pegasi W.	22 32 59	4626	23 18 57	4461	24 10 8	4307	25 6 3	4156
9	α Arietis E.	37 22 12	3003	35 52 3	3018	34 22 12	3039	32 52 47	3065
	Aldebaran E.	67 47 41	2611	66 9 1	2604	64 29 58	2677	62 50 31	2660
	Pollux E.	111 19 14	2606	109 42 29	2678	108 5 20	2660	106 27 46	2646
	α Aquilæ W.	77 0 4	2907	78 31 11	2934	80 2 47	2913	81 34 49	2893
	Jupiter W.	45 17 43	2500	46 58 56	2483	48 40 33	2467	50 22 33	2450
9	Fomalhaut W.	44 19 37	3184	45 46 5	3129	47 13 40	3076	48 42 19	3036
	α Pegasi W.	30 42 24	3731	31 58 38	3699	33 17 13	3463	34 37 56	3379

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
1	SUN	W.	61° 51' 55"	3470	63° 12' 53"	3471	64° 33' 49"	3473	65° 54' 43"	3475
	Jupiter	E.	47 12 51	3099	45 44 28	3091	44 16 8	3094	42 47 52	3096
	Fomalhaut	E.	56 14 37	3570	54 55 30	3490	53 36 45	3613	52 18 24	3635
	α Pegasi	E.	70 22 33	3365	68 59 59	3393	67 37 35	3402	66 15 21	3411
	α Arietis	E.	113 36 3	3235	112 10 24	3225	110 44 45	3225	109 19 5	3223
2	SUN	W.	72 38 56	3476	73 59 47	3473	75 20 41	3473	76 41 36	3470
	Jupiter	E.	35 26 59	3101	33 58 51	3101	32 30 43	3101	31 2 34	3101
	Fomalhaut	E.	45 53 32	3781	44 38 10	3819	43 23 26	3868	42 9 24	3903
	α Pegasi	E.	59 26 51	3463	58 5 44	3473	56 44 50	3465	55 24 9	3497
	α Arietis	E.	102 10 17	3214	100 44 24	3212	99 18 29	3209	97 52 30	3206
3	SUN	W.	83 27 5	3449	84 48 26	3445	86 9 52	3448	87 31 25	3431
	Jupiter	E.	23 41 34	3094	22 13 17	3093	20 44 59	3091	19 16 38	3089
	Fomalhaut	E.	36 11 56	4306	35 3 36	4291	33 56 35	4386	32 51 1	4494
	α Pegasi	E.	48 44 37	3577	47 25 38	3596	46 7 2	3623	44 48 51	3646
	α Arietis	E.	90 41 34	3185	89 15 7	3180	87 48 34	3175	86 21 55	3169
	Aldebaran	E.	123 30 41	3054	122 1 35	3049	120 32 22	3043	119 3 2	3037
4	SUN	W.	94 21 16	3391	95 43 43	3392	97 6 20	3372	98 29 9	3360
	Fomalhaut	E.	27 51 27	4339	26 58 48	4396	26 9 12	4603	25 22 58	4809
	α Pegasi	E.	38 25 40	3823	37 11 2	3875	35 57 17	3923	34 44 30	3999
	α Arietis	E.	79 6 50	3137	77 39 25	3129	76 11 51	3121	74 44 7	3114
	Aldebaran	E.	111 34 19	2990	110 4 5	2990	108 33 40	2961	107 3 3	2970
5	SUN	W.	105 26 30	3301	106 50 40	3289	108 15 6	3274	109 39 48	3260
	α Aquilæ	W.	39 9 51	4270	40 17 11	4173	41 26 3	4063	42 36 21	4001
	α Pegasi	E.	29 0 17	4519	27 56 42	4684	26 55 29	4879	25 56 57	5107
	α Arietis	E.	67 23 2	3073	65 54 18	3084	64 25 24	3065	62 56 19	3047
	Aldebaran	E.	99 26 40	2915	97 54 40	2908	96 22 25	2890	94 49 53	2876
6	SUN	W.	116 47 31	3185	118 13 58	3170	119 40 43	3163	121 7 48	3137
	α Aquilæ	W.	48 46 29	3670	50 3 48	3616	51 22 5	3565	52 41 17	3518
	α Arietis	E.	55 28 20	3006	53 58 15	3000	52 28 2	2993	50 57 41	2967
	Aldebaran	E.	87 2 50	2906	85 28 29	2791	83 53 49	2775	82 18 49	2760
7	SUN	W.	128 28 14	3053	129 57 21	3036	131 26 49	3020	132 56 37	3003
	α Aquilæ	W.	59 29 54	3308	60 53 56	3272	62 18 40	3237	63 44 5	3204
	Jupiter	W.	25 34 47	3716	27 11 6	3698	28 47 49	3679	30 24 57	3660
	α Arietis	E.	43 24 32	3976	41 53 49	3978	40 23 9	3963	38 52 35	3952
	Aldebaran	E.	74 18 32	2678	72 41 23	2663	71 3 52	2645	69 25 58	2628
	Pollux	E.	117 42 1	2773	116 6 57	2758	114 31 28	2735	112 55 34	2715
8	α Aquilæ	W.	71 0 37	3056	72 29 41	3029	73 59 18	3004	75 29 26	2980
	Fomalhaut	W.	38 46 48	3465	40 7 51	3386	41 30 25	3313	42 54 22	3246
	Jupiter	W.	38 36 51	2699	40 16 27	2692	41 56 28	2636	43 36 53	2618
	α Pegasi	W.	26 6 16	4484	27 10 22	4353	28 17 58	4263	29 28 45	4181
	α Arietis	E.	31 23 54	3098	29 55 42	3143	28 28 24	3197	27 2 11	3260
	Aldebaran	E.	61 10 41	2643	59 30 27	2626	57 49 50	2609	56 8 49	2593
	Pollux	E.	104 49 46	2623	103 11 21	2604	101 32 32	2586	99 53 18	2568
9	α Aquilæ	W.	83 7 18	2873	84 40 12	2855	86 13 29	2838	87 47 8	2821
	Jupiter	W.	52 4 57	2433	53 47 45	2417	55 30 55	2403	57 14 27	2387
	Fomalhaut	W.	50 11 59	2981	51 42 36	2959	53 14 6	2939	54 46 26	2921
	α Pegasi	W.	36 0 36	3289	37 25 2	3265	38 51 5	3130	40 18 38	3064

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
9	Aldebaran E.	54° 27' 24"	2475	52° 45' 36"	2456	51° 3' 24"	2442	49° 20' 49"	2426
	Pollux E.	98 13 39	2461	96 33 36	2434	94 53 10	2417	93 12 21	2400
10	α Aquilæ W.	89 21 9	2806	90 55 29	2792	92 30 8	2779	94 5 4	2767
	Jupiter W.	58 58 21	2371	60 42 38	2356	62 27 16	2343	64 12 14	2328
	Fomalhaut W.	56 19 35	2826	57 53 29	2794	59 28 5	2763	61 3 21	2734
	α Pegasi W.	41 47 32	2602	43 17 42	2646	44 49 2	2666	46 21 27	2646
	Aldebaran E.	40 42 16	2348	38 57 26	2334	37 12 16	2320	35 26 45	2305
	Pollux E.	84 42 35	2424	82 59 34	2409	81 16 12	2396	79 32 30	2382
	Regulus E.	120 48 16	2360	119 3 30	2336	117 18 23	2323	115 32 55	2307
11	α Aquilæ W.	102 3 4	2726	103 39 9	2722	105 15 19	2720	106 51 32	2719
	Jupiter W.	73 2 3	2364	74 48 56	2362	76 36 6	2341	78 23 32	2321
	Fomalhaut W.	69 8 36	2614	70 47 12	2606	72 26 14	2677	74 5 41	2689
	α Pegasi W.	54 17 15	2664	55 54 43	2635	57 32 50	2609	59 11 33	2583
	Aldebaran E.	26 34 14	2341	24 46 48	2321	22 59 6	2320	21 11 8	2210
	Pollux E.	70 49 37	2326	69 4 15	2316	67 18 38	2307	65 32 49	2300
	Regulus E.	106 40 36	2343	104 53 13	2323	103 5 33	2321	101 17 37	2210
12	α Aquilæ W.	114 52 1	2745	116 27 41	2766	118 3 6	2771	119 38 12	2786
	Jupiter W.	87 24 18	2167	89 13 5	2180	91 2 3	2174	92 51 10	2168
	Fomalhaut W.	82 28 12	2484	84 9 33	2468	85 51 7	2477	87 32 53	2470
	α Pegasi W.	67 32 52	2487	69 14 24	2472	70 56 17	2458	72 38 29	2445
	α Arctis W.	24 47 33	2668	26 18 1	2663	27 50 42	2793	29 25 19	2717
	Pollux E.	56 41 18	2374	54 54 40	2371	53 7 58	2370	51 21 15	2270
	Regulus E.	92 14 15	2167	90 24 57	2169	88 35 27	2162	86 45 47	2147
13	Jupiter W.	101 58 44	2147	103 48 32	2145	105 38 23	2143	107 28 17	2141
	Fomalhaut W.	96 3 35	2484	97 45 53	2463	99 28 12	2455	101 10 29	2456
	α Pegasi W.	81 13 9	2465	82 56 37	2401	84 40 11	2397	86 23 50	2394
	α Arctis W.	37 39 3	2480	39 20 44	2461	41 3 6	2426	42 46 3	2404
	Pollux E.	42 28 26	2396	40 42 19	2396	38 56 28	2319	37 10 56	2335
	Regulus E.	77 35 34	2126	75 45 14	2122	73 54 49	2120	72 4 21	2120
14	Fomalhaut W.	109 40 11	2496	111 21 34	2604	113 2 41	2617	114 43 30	2623
	α Pegasi W.	95 2 27	2369	96 46 3	2403	98 29 33	2408	100 12 56	2415
	α Arctis W.	51 27 25	2383	53 12 36	2326	54 57 58	2320	56 43 29	2314
	Aldebaran W.	17 16 13	2121	19 6 40	2122	20 57 5	2124	22 47 27	2123
	Pollux E.	28 31 4	2465	26 49 30	2636	25 9 7	2600	23 30 12	2578
	Regulus E.	62 51 54	2122	61 1 28	2124	59 11 5	2126	57 20 46	2129
	Spica E.	116 23 32	2146	114 33 42	2146	112 43 53	2147	110 54 5	2146
15	α Pegasi W.	108 47 2	2464	110 29 6	2477	112 10 51	2492	113 52 16	2507
	α Arctis W.	65 32 20	2307	67 18 9	2309	69 3 56	2311	70 49 39	2314
	Aldebaran W.	31 57 51	2149	33 47 35	2146	35 37 10	2161	37 26 36	2167
	Regulus E.	48 10 37	2163	46 20 58	2166	44 31 27	2166	42 42 6	2171
	Spica E.	101 46 10	2166	99 56 54	2174	98 7 47	2180	96 18 50	2186
	Sun E.	132 30 37	2465	130 49 2	2491	129 7 36	2497	127 26 18	2502
16	α Pegasi W.	122 13 9	2610	123 51 50	2637	125 29 55	2666	127 7 22	2696
	α Arctis W.	79 36 45	2341	81 21 45	2348	83 6 35	2355	84 51 14	2364
	Aldebaran W.	46 31 10	2206	48 19 30	2214	50 7 37	2228	51 55 31	2261
	Regulus E.	33 38 5	2211	31 49 54	2220	30 1 56	2229	28 14 12	2239
	Spica E.	87 16 37	2234	85 28 45	2233	83 41 6	2241	81 53 39	2250
	Sun E.	119 2 7	2640	117 21 49	2648	115 41 43	2667	114 1 49	2666

GREENWICH MEAN TIME

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	Aldebaran E.	47° 37' 52"	2410	45° 54' 32"	2394	44° 10' 49"	2379	42° 26' 44"	2363
	Pollux E.	91 31 8	2406	89 49 33	2400	88 7 36	2403	86 25 16	2408
10	α Aquilæ W.	95 40 15	2766	97 15 40	2747	98 51 18	2739	100 27 6	2732
	Jupiter W.	65 57 33	2814	67 43 12	2801	69 29 11	2798	71 15 28	2776
	Fomalhaut W.	62 30 16	2707	64 15 47	2681	65 52 52	2667	67 30 29	2635
	α Pegasi W.	47 54 53	2608	49 29 15	2706	51 4 28	2729	52 40 29	2696
	Aldebaran E.	33 40 53	2292	31 54 42	2279	30 8 11	2266	28 21 22	2253
	Pollux E.	77 48 30	2370	76 4 12	2367	74 19 36	2346	72 34 44	2336
	Regulus E.	113 47 6	2294	112 0 57	2281	110 14 29	2266	108 27 42	2256
11	α Aquilæ W.	108 27 46	2720	110 3 59	2724	111 40 7	2729	113 16 9	2736
	Jupiter W.	80 11 13	2221	81 59 9	2212	83 47 20	2203	85 35 43	2196
	Fomalhaut W.	75 45 32	2644	77 25 44	2630	79 6 16	2617	80 47 6	2606
	α Pegasi W.	60 50 51	2661	62 30 40	2640	64 10 58	2620	65 51 43	2603
	Aldebaran E.	19 22 55	2200	17 34 28	2191	15 45 47	2182	13 56 53	2174
	Pollux E.	63 46 49	2298	62 0 39	2286	60 14 19	2281	58 27 51	2277
	Regulus E.	99 29 24	2200	97 40 57	2191	95 52 16	2183	94 3 22	2174
12	α Aquilæ W.	121 12 56	2806	122 47 14	2831	124 21 1	2859	125 54 12	2891
	Jupiter W.	94 40 27	2163	96 29 51	2167	98 19 23	2164	100 9 0	2160
	Fomalhaut W.	89 14 49	2464	90 56 53	2460	92 39 3	2466	94 21 18	2465
	α Pegasi W.	74 20 59	2426	76 3 44	2426	77 46 41	2418	79 29 50	2411
	α Arietis W.	31 1 36	2663	32 39 19	2601	34 18 13	2566	35 58 10	2515
	Pollux E.	49 34 32	2273	47 47 51	2275	46 1 15	2260	44 14 46	2236
	Regulus E.	84 56 0	2141	83 6 4	2136	81 16 0	2132	79 25 50	2128
13	Jupiter W.	109 18 12	2141	111 8 9	2141	112 58 5	2141	114 48 1	2143
	Fomalhaut W.	102 52 41	2402	104 34 47	2407	106 16 46	2476	107 58 35	2484
	α Pegasi W.	88 7 33	2293	89 51 18	2293	91 35 3	2294	93 18 47	2296
	α Arietis W.	44 29 32	2264	46 13 29	2266	47 57 49	2266	49 42 28	2243
	Pollux E.	35 25 47	2266	33 41 7	2278	31 57 0	2407	30 13 35	2445
	Regulus E.	70 13 52	2119	68 23 22	2119	66 32 52	2119	64 42 22	2120
14	Fomalhaut W.	116 23 57	2560	118 4 1	2667	119 43 41	2686	121 22 52	2611
	α Pegasi W.	101 56 10	2423	103 39 13	2431	105 22 4	2441	107 4 41	2462
	α Arietis W.	58 29 8	2611	60 14 52	2606	62 0 40	2607	63 46 30	2607
	Aldebaran W.	24 37 44	2131	26 27 56	2136	28 18 1	2139	30 8 0	2148
	Pollux E.	21 53 3	2779	20 18 7	2906	18 45 55	3071	17 17 10	3293
	Regulus E.	55 30 31	2133	53 40 23	2137	51 50 20	2141	50 0 24	2147
	Spica E.	109 4 19	2161	107 14 38	2166	105 25 3	2169	103 35 33	2163
15	α Pegasi W.	115 33 19	2625	117 13 58	2643	118 54 11	2664	120 33 55	2686
	α Arietis W.	72 35 18	2616	74 20 51	2623	76 6 17	2626	77 51 35	2624
	Aldebaran W.	39 15 53	2174	41 4 59	2183	42 53 54	2189	44 42 38	2197
	Regulus E.	40 52 55	2178	39 3 55	2186	37 15 6	2194	35 26 29	2202
	Spica E.	94 30 2	2193	92 41 24	2200	90 52 57	2206	89 4 41	2216
	SUN E.	125 45 8	2610	124 4 8	2616	122 23 17	2624	120 42 37	2631
16	α Pegasi W.	128 44 8	2739	130 20 10	2765	131 55 24	2804	133 29 47	2845
	α Arietis W.	86 35 41	2378	88 19 55	2361	90 3 57	2361	91 47 45	2401
	Aldebaran W.	53 43 13	2240	55 30 41	2249	57 17 55	2269	59 4 55	2290
	Regulus E.	26 26 42	2260	24 39 29	2260	22 52 31	2281	21 5 49	2283
	Spica E.	80 6 26	2260	78 19 27	2260	76 32 42	2279	74 46 12	2269
	SUN E.	112 22 8	2676	110 42 40	2666	109 3 25	2696	107 24 24	2696

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	IIIh.	P. L. of Dist.	VIh.	P. L. of Dist.	IXh.	P. L. of Dist.
17	α Arietis W.	93° 31' 18"	2412	95° 14' 36"	2422	96° 57' 39"	2433	98° 40' 27"	2446
	Aldebaran W.	60 51 40	2279	62 38 11	2289	64 24 27	2298	66 10 29	2309
	Pollux W.	19 51 9	2857	21 22 16	2871	22 55 12	2892	24 29 37	2748
	Spica E.	72 59 56	2299	71 13 55	2310	69 28 10	2320	67 42 40	2331
	SUN E.	105 45 36	2316	104 7 3	2326	102 28 44	2337	100 50 39	2348
18	α Arietis W.	107 10 11	2307	108 51 14	2321	110 31 58	2335	112 12 23	2349
	Aldebaran W.	74 56 53	2361	76 41 24	2371	78 25 40	2382	80 9 41	2392
	Pollux W.	32 35 8	2618	34 13 45	2633	35 52 36	2655	37 31 38	2669
	Spica E.	58 59 8	2387	57 15 14	2398	55 31 37	2410	53 48 17	2422
	SUN E.	92 43 59	2704	91 7 24	2716	89 31 5	2727	87 55 1	2738
19	α Arietis W.	120 29 19	2327	122 7 37	2346	123 45 30	2363	125 22 59	2383
	Aldebaran W.	88 46 0	2446	90 28 31	2456	92 10 47	2465	93 52 49	2476
	Pollux W.	45 47 55	2586	47 27 9	2599	49 6 19	2623	50 45 24	2597
	Spica E.	45 15 51	2483	43 34 14	2497	41 52 56	2510	40 11 56	2523
	SUN E.	79 58 27	2796	78 23 54	2807	76 49 35	2818	75 15 31	2830
20	Aldebaran W.	102 19 22	2527	103 59 58	2536	105 40 21	2546	107 20 30	2556
	Pollux W.	58 59 9	2626	60 37 29	2632	62 15 41	2639	63 51 43	2646
	Regulus W.	22 15 35	2837	23 55 57	2846	25 36 6	2856	27 16 3	2864
	Spica E.	31 51 49	2596	30 12 51	2615	28 34 17	2635	26 56 9	2655
	SUN E.	67 28 53	2987	65 56 17	2998	64 23 56	2999	62 51 49	2920
21	Aldebaran W.	115 37 57	2604	117 16 47	2613	118 55 25	2623	120 33 50	2631
	Pollux W.	72 1 24	2684	73 38 25	2692	75 15 16	2700	76 51 56	2707
	Regulus W.	35 32 46	2808	37 11 30	2817	38 50 2	2826	40 28 22	2835
	SUN E.	55 14 45	2976	53 44 2	2987	52 13 33	2998	50 43 18	3008
22	Pollux W.	84 52 33	2750	86 28 7	2757	88 3 31	2765	89 38 43	2775
	Regulus W.	48 37 0	2678	50 14 9	2687	51 51 6	2695	53 27 52	2704
	SUN E.	43 15 30	3066	41 46 38	3078	40 18 1	3089	38 49 38	3101
23	Pollux W.	97 31 54	2818	99 5 58	2828	100 39 50	2837	102 13 30	2846
	Regulus W.	61 28 51	2746	63 4 30	2754	64 39 58	2763	66 15 15	2771
	SUN E.	31 31 33	3195	30 4 45	3192	28 38 14	3198	27 12 2	3214
28	SUN W.	25 48 39	3304	27 8 59	3303	28 29 20	3302	29 49 42	3302
	Jupiter E.	58 41 9	3078	57 12 33	3083	55 44 3	3088	54 15 39	3093
	Fomalhaut E.	64 51 10	3436	63 29 34	3452	62 8 16	3465	60 47 16	3485
	α Pegasi E.	79 24 51	3326	78 1 10	3334	76 37 38	3343	75 14 16	3351
	α Arietis E.	122 53 31	3223	121 27 48	3230	120 2 3	3239	118 36 17	3230
29	SUN W.	36 31 34	3303	37 51 55	3304	39 12 15	3305	40 32 34	3305
	Jupiter E.	46 55 4	3114	45 27 12	3117	43 59 23	3120	42 31 39	3124
	Fomalhaut E.	54 7 19	3386	52 48 28	3398	51 30 2	3394	50 12 4	3399
	α Pegasi E.	68 20 2	3399	66 57 44	3409	65 35 38	3421	64 13 45	3431
	α Arietis E.	111 27 29	3220	110 1 43	3230	108 35 58	3220	107 10 13	3220
30	SUN W.	47 14 5	3305	48 34 24	3305	49 54 43	3303	51 15 4	3303
	Jupiter E.	35 13 42	3133	33 46 13	3134	32 18 46	3135	30 51 19	3137
	Fomalhaut E.	43 50 10	3330	42 35 39	3375	41 21 54	3323	40 8 58	3375
	α Pegasi E.	57 27 40	3497	56 7 12	3511	54 47 0	3537	53 27 6	3545
	α Arietis E.	100 1 28	3230	98 35 42	3230	97 9 56	3219	95 44 9	3218
	Aldebaran E.	133 4 25	3064	131 35 56	3083	130 7 26	3083	128 38 56	3082

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXh.	P. L. of Dist.
17	α Arietis W.	100° 22' 58"	2457	102° 5' 12"	2466	103° 47' 10"	2481	105° 28' 50"	2494
	Aldebaran W.	67 56 16	2319	69 41 48	2329	71 27 5	2339	73 12 7	2350
	Pollux W.	26 5 13	2706	27 41 45	2673	29 19 1	2648	30 56 51	2628
	Spica E.	65 57 26	2342	64 12 28	2358	62 27 45	2364	60 43 18	2376
	Sun E.	99 12 49	2659	97 35 14	2670	95 57 54	2681	94 20 49	2692
18	α Arietis W.	113 52 28	2661	115 32 13	2690	117 11 36	2698	118 50 38	2610
	Aldebaran W.	81 53 27	2403	83 36 58	2414	85 20 13	2424	87 3 14	2434
	Pollux W.	39 10 48	2688	40 50 3	2584	42 29 20	2563	44 8 38	2564
	Spica E.	52 5 13	2423	50 22 26	2446	48 39 57	2458	46 57 45	2471
	Sun E.	86 19 12	2760	84 43 38	2761	83 8 19	2778	81 33 16	2784
19	α Arietis W.	127 0 2	2702	128 36 39	2723	130 12 48	2744	131 48 29	2766
	Aldebaran W.	81 53 27	2496	97 16 9	2497	98 57 27	2506	100 38 32	2517
	Pollux W.	52 24 23	2601	54 3 16	2607	55 42 2	2612	57 20 40	2619
	Spica E.	38 31 15	2637	36 50 53	2581	35 10 51	2568	33 31 9	2562
	Sun E.	73 41 42	2642	72 8 8	2662	70 34 48	2664	69 1 43	2676
20	Aldebaran W.	109 0 26	2566	110 40 8	2575	112 19 38	2586	113 58 54	2594
	Pollux W.	65 31 35	2564	67 9 17	2560	68 46 50	2568	70 24 13	2577
	Regulus W.	28 55 48	2573	30 35 20	2581	32 14 41	2590	33 53 50	2599
	Spica E.	25 18 28	2576	23 41 16	2703	22 4 40	2735	20 28 46	2766
	Sun E.	61 19 56	2632	59 48 18	2642	58 16 53	2654	56 45 42	2666
21	Aldebaran W.	122 12 3	2640	123 50 3	2649	125 27 51	2658	127 5 27	2667
	Pollux W.	78 28 26	2716	80 4 45	2726	81 40 52	2733	83 16 48	2741
	Regulus W.	42 6 30	2643	43 44 26	2663	45 22 9	2662	46 59 40	2670
	Sun E.	49 13 16	2621	47 43 29	2633	46 13 55	2643	44 44 35	2655
22	Pollux W.	91 13 44	2763	92 48 34	2792	94 23 12	2801	95 57 39	2810
	Regulus W.	55 4 26	2713	56 40 49	2721	58 17 1	2729	59 53 2	2738
	Sun E.	37 21 30	3114	35 53 37	3127	34 26 0	3138	32 58 38	3153
23	Pollux W.	103 46 58	2865	105 20 14	2864	106 53 19	2873	108 26 12	2883
	Regulus W.	67 50 21	2779	69 25 16	2787	71 0 1	2796	72 34 35	2803
	Sun E.	25 46 10	3232	24 20 40	3263	22 55 33	3276	21 30 53	3300
28	Sun W.	31 10 4	3501	32 30 27	3501	33 50 50	3502	35 11 12	3502
	Jupiter E.	52 47 22	3086	51 19 10	3102	49 51 3	3106	48 23 1	3110
	Fomalhaut E.	59 26 35	3503	58 6 14	3521	56 46 13	3541	55 26 34	3563
	α Pegasi E.	73 51 4	3360	72 28 2	3370	71 5 11	3379	69 42 31	3389
	α Arietis E.	117 10 32	3220	115 44 47	3220	114 19 1	3220	112 53 15	3220
29	Sun W.	41 52 53	3506	43 13 11	3506	44 33 29	3506	45 53 47	3506
	Jupiter E.	41 3 58	3126	39 36 20	3129	38 8 45	3130	36 41 12	3133
	Fomalhaut E.	48 54 34	3589	47 37 35	3792	46 21 11	3768	45 5 22	3791
	α Pegasi E.	62 52 4	3443	61 30 36	3466	60 9 23	3469	58 48 24	3492
	α Arietis E.	105 44 28	3220	104 18 43	3221	102 52 59	3220	101 27 14	3220
30	Sun W.	52 35 26	3500	53 55 50	3496	55 16 16	3496	56 36 45	3493
	Jupiter E.	29 23 54	3137	27 56 29	3137	26 29 4	3137	25 1 39	3137
	Fomalhaut E.	38 56 54	4034	37 45 48	4101	36 35 47	4173	35 26 55	4249
	α Pegasi E.	52 7 31	3363	50 48 16	3363	49 29 23	3364	48 10 53	3366
	α Arietis E.	94 18 20	3216	92 52 30	3216	91 26 39	3214	90 0 46	3212
	Aldebaran E.	127 10 25	3082	125 41 53	3082	124 13 21	3080	122 44 47	3078

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sideral Time of the Semi-diameter passing the Meridian.	Equation of Time, to be subtracted from		Diff. for 1 hour.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	Semi-diameter.	added to Apparent Time.				
<i>Sun.</i>	1	^h 16 ^m 28 ^s 35.08	10.794	S. 21° 47' 28.9"	23.52	16' 15.95"	70.28	^m 10 ^s 52.81		0.937	
Mon.	2	16 32 54.53	10.820	21 56 41.2	22.47	16 16.10	70.37	10 29.98		0.963	
Tues.	3	16 37 14.58	10.845	22 5 28.1	21.41	16 16.25	70.45	10 6.55		0.968	
Wed.	4	16 41 35.20	10.869	22 13 49.2	20.33	16 16.39	70.53	9 42.55		1.012	
Thur.	5	16 45 56.39	10.892	22 21 44.3	19.24	16 16.53	70.61	9 17.98		1.035	
Fri.	6	16 50 18.13	10.914	22 29 13.4	18.15	16 16.67	70.68	8 52.88		1.057	
Sat.	7	16 54 40.38	10.935	22 36 16.2	17.05	16 16.80	70.75	8 27.25		1.078	
<i>Sun.</i>	8	16 59 3.12	10.954	22 42 52.5	15.94	16 16.93	70.82	8 1.14		1.097	
Mon.	9	17 3 26.30	10.973	22 49 1.9	14.82	16 17.05	70.88	7 34.58		1.116	
Tues.	10	17 7 49.92	10.990	22 54 44.2	13.69	16 17.17	70.94	7 7.59		1.133	
Wed.	11	17 12 13.96	11.007	22 59 59.2	12.55	16 17.28	70.99	6 40.19		1.150	
Thur.	12	17 16 38.39	11.022	23 4 46.9	11.41	16 17.38	71.04	6 12.39		1.165	
Fri.	13	17 21 3.18	11.037	23 9 7.1	10.26	16 17.48	71.09	5 44.23		1.180	
Sat.	14	17 25 28.30	11.050	23 12 59.7	9.11	16 17.57	71.13	5 15.74		1.193	
<i>Sun.</i>	15	17 29 53.73	11.062	23 16 24.7	7.95	16 17.65	71.17	4 46.96		1.205	
Mon.	16	17 34 19.44	11.073	23 19 21.7	6.79	16 17.73	71.20	4 17.89		1.216	
Tues.	17	17 38 45.40	11.082	23 21 50.7	5.62	16 17.80	71.23	3 48.57		1.226	
Wed.	18	17 43 11.58	11.090	23 23 51.5	4.45	16 17.87	71.25	3 19.03		1.234	
Thur.	19	17 47 37.92	11.097	23 25 24.2	3.28	16 17.93	71.27	2 49.32		1.241	
Fri.	20	17 52 4.40	11.102	23 26 28.7	2.10	16 17.99	71.28	2 19.48		1.246	
Sat.	21	17 56 31.00	11.106	23 27 5.0	0.92	16 18.05	71.29	1 49.52		1.250	
<i>Sun.</i>	22	18 0 57.69	11.108	23 27 12.9	0.26	16 18.10	71.30	1 19.46		1.252	
Mon.	23	18 5 24.42	11.108	23 26 52.4	1.44	16 18.15	71.30	0 49.38		1.253	
Tues.	24	18 9 51.13	11.108	23 26 3.7	2.61	16 18.19	71.29	0 19.31		1.252	
Wed.	25	18 14 17.80	11.106	23 24 46.8	3.79	16 18.23	71.28	0 10.73		1.249	
Thur.	26	18 18 44.40	11.102	23 23 1.8	4.96	16 18.26	71.27	0 40.69		1.245	
Fri.	27	18 23 10.89	11.096	23 20 48.5	6.14	16 18.29	71.25	1 10.54		1.239	
Sat.	28	18 27 37.22	11.089	23 18 7.0	7.31	16 18.32	71.23	1 40.23		1.232	
<i>Sun.</i>	29	18 32 3.35	11.080	23 14 57.4	8.48	16 18.34	71.21	2 9.72		1.223	
Mon.	30	18 36 29.24	11.070	23 11 19.8	9.64	16 18.36	71.18	2 38.96		1.213	
Tues.	31	18 40 54.86	11.058	23 7 14.2	10.80	16 18.38	71.15	3 7.95		1.201	
Wed.	32	18 45 20.19	11.045	S. 23° 2' 41.0"	11.95	16 18.39	71.11	3 36.65		1.188	

NOTE. — Mean Time of the Semidiameter passing may be found by subtracting 0s.18 from the Sideral Time.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to	Diff. for 1 hour.	Sidereal Time.
		Apparent Right Ascension.	Diff. for 1 hour.	Apparent Declination.	Diff. for 1 hour.	subtracted from Mean Time.		
Sun.	1	^h 16 ^m 28 ^s 37.04	10.794	S. 21° 47' 33.2"	23.52	^m 10 52.64	0.937	^h 16 39 29.68
Mon.	2	16 32 56.42	10.820	21 56 45.2	22.47	10 29.81	0.963	16 43 26.23
Tues.	3	16 37 16.40	10.845	22 5 31.7	21.41	10 6.39	0.988	16 47 22.79
Wed.	4	16 41 36.96	10.869	22 13 52.5	20.33	9 42.39	1.012	16 51 19.35
Thur.	5	16 45 58.08	10.892	22 21 47.3	19.24	9 17.82	1.035	16 55 15.90
Fri.	6	16 50 19.74	10.914	22 29 16.1	18.15	8 52.72	1.057	16 59 12.46
Sat.	7	16 54 41.92	10.935	22 36 18.6	17.05	8 27.10	1.078	17 3 9.02
Sun.	8	16 59 4.58	10.954	22 42 54.6	15.94	8 0.99	1.097	17 7 5.57
Mon.	9	17 3 27.68	10.973	22 49 3.7	14.82	7 34.45	1.116	17 11 2.13
Tues.	10	17 7 51.22	10.990	22 54 45.7	13.69	7 7.47	1.133	17 14 58.69
Wed.	11	17 12 15.18	11.007	23 0 0.6	12.55	6 40.06	1.150	17 18 55.24
Thur.	12	17 16 39.53	11.022	23 4 48.1	11.41	6 12.27	1.165	17 22 51.80
Fri.	13	17 21 4.24	11.037	23 9 8.1	10.26	5 44.12	1.180	17 26 48.36
Sat.	14	17 25 29.27	11.050	23 13 0.5	9.11	5 15.64	1.193	17 30 44.91
Sun.	15	17 29 54.61	11.062	23 16 25.3	7.95	4 46.86	1.205	17 34 41.47
Mon.	16	17 34 20.23	11.073	23 19 22.2	6.79	4 17.80	1.216	17 38 38.03
Tues.	17	17 38 46.10	11.082	23 21 51.0	5.62	3 48.49	1.226	17 42 34.59
Wed.	18	17 43 12.19	11.090	23 23 51.7	4.45	3 18.95	1.234	17 46 31.14
Thur.	19	17 47 38.44	11.097	23 25 24.2	3.28	2 49.26	1.241	17 50 27.70
Fri.	20	17 52 4.83	11.102	23 26 28.7	2.10	2 19.43	1.246	17 54 24.26
Sat.	21	17 56 31.34	11.106	23 27 5.0	0.92	1 49.48	1.250	17 58 20.82
Sun.	22	18 0 57.94	11.108	23 27 12.9	0.26	1 19.43	1.252	18 2 17.37
Mon.	23	18 5 24.57	11.108	23 26 52.4	1.44	0 49.36	1.253	18 6 13.93
Tues.	24	18 9 51.19	11.108	23 26 3.7	2.61	0 19.30	1.252	18 10 10.49
Wed.	25	18 14 17.77	11.106	23 24 46.8	3.79	0 10.73	1.249	18 14 7.04
Thur.	26	18 18 44.28	11.102	23 23 1.8	4.96	0 40.68	1.249	18 18 3.60
Fri.	27	18 23 10.68	11.096	23 20 48.6	6.14	1 10.52	1.239	18 22 0.16
Sat.	28	18 27 36.91	11.089	23 18 7.2	7.31	1 40.20	1.232	18 25 56.71
Sun.	29	18 32 2.95	11.080	23 14 57.7	8.48	2 9.68	1.223	18 29 53.27
Mon.	30	18 36 28.75	11.070	23 11 20.2	9.64	2 38.92	1.213	18 33 49.83
Tues.	31	18 40 54.29	11.058	23 7 14.8	10.80	3 7.90	1.201	18 37 46.39
Wed.	32	18 45 19.53	11.045	S. 23 2 41.7	11.95	3 36.59	1.188	18 41 42.94

Note. — The Semidiameter for Mean Noon may be assumed the same as that for Apparent Noon.

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 hour.	Mean Time of Sidereal Ob.
		True LONGITUDE.		Diff. for 1 hour.	LATITUDE.			
		λ	λ'					
1	335	248° 52' 28."	51' 49.3	152.18	+0.06	9.9937510	29.0	^h 7 ^m 19 ^s 18.16
2	336	249 53 21.0	52 41.8	152.21	—0.06	.9936822	28.3	7 15 22.25
3	337	250 54 14.4	53 35.1	152.25	0.20	.9936151	27.6	7 11 26.34
4	338	251 55 8.7	54 29.2	152.28	0.34	.9935499	26.8	7 7 30.43
5	339	252 56 3.8	55 24.1	152.31	0.47	.9934867	25.9	7 3 34.51
6	340	253 56 59.6	56 19.7	152.34	0.58	.9934256	25.0	6 59 38.60
7	341	254 57 56.0	57 16.0	152.37	0.66	.9933668	24.0	6 55 42.69
8	342	255 58 53.1	58 13.0	152.40	0.74	.9933105	22.9	6 51 46.77
9	343	256 59 51.0	59 10.7	152.43	0.79	.9932568	21.8	6 47 50.87
10	344	258 0 49.6	0 9.1	152.46	0.80	.9932057	20.7	6 43 54.96
11	345	259 1 48.9	1 8.2	152.49	0.78	.9931573	19.6	6 39 59.05
12	346	260 2 49.1	2 8.3	152.53	0.74	.9931115	18.6	6 36 3.14
13	347	261 3 50.2	3 9.3	152.56	0.67	.9930683	17.5	6 32 7.23
14	348	262 4 52.2	4 11.1	152.60	0.57	.9930278	16.4	6 28 11.32
15	349	263 5 55.0	5 13.7	152.63	0.45	.9929899	15.3	6 24 15.41
16	350	264 6 58.7	6 17.2	152.67	0.32	.9929546	14.3	6 20 19.50
17	351	265 8 3.2	7 21.6	152.70	0.19	.9929218	13.3	6 16 23.58
18	352	266 9 8.5	8 26.8	152.74	—0.06	.9928914	12.3	6 12 27.67
19	353	267 10 14.7	9 32.8	152.78	+0.07	.9928631	11.4	6 8 31.75
20	354	268 11 21.7	10 39.6	152.81	0.18	.9928368	10.5	6 4 35.84
21	355	269 12 29.5	11 47.2	152.84	0.27	.9928126	9.7	6 0 39.94
22	356	270 13 38.0	12 55.5	152.86	0.33	.9927902	8.9	5 56 44.03
23	357	271 14 47.0	14 4.4	152.89	0.36	.9927696	8.2	5 52 48.12
24	358	272 15 56.6	15 13.8	152.91	0.36	.9927508	7.6	5 48 52.21
25	359	273 17 6.7	16 23.7	152.93	0.33	.9927336	6.9	5 44 56.29
26	360	274 18 17.1	17 33.9	152.94	0.27	.9927180	6.2	5 41 0.37
27	361	275 19 27.7	18 44.4	152.94	0.18	.9927041	5.5	5 37 4.46
28	362	276 20 38.3	19 54.9	152.94	+0.08	.9926919	4.7	5 33 8.55
29	363	277 21 48.9	21 5.3	152.94	—0.04	.9926816	4.0	5 29 12.65
30	364	278 22 59.5	22 15.7	152.94	0.17	.9926730	3.2	5 25 16.74
31	365	279 24 10.0	23 26.0	152.94	0.30	.9926662	2.4	5 21 20.83
32	366	280 25 20.4	24 36.3	152.93	—0.43	9.9926615	1.5	5 17 24.92

NOTE: λ corresponds to the true equinox of the date, λ' to the mean equinox of January 0d.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S									
	SEMI-DIAMETER.		HORIZONTAL PARALLAX.				MERIDIAN PASSAGE.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 hour.	Midnight.	Diff. for 1 hour.		Diff. for 1 hour.		
1	14 46.8	14 48.4	54 7.7	+0.42	54 13.9	+0.62	^h 4 ^m 1.8	^m 1.90	^d 5.3	
2	14 50.8	14 53.8	54 22.5	0.82	54 33.5	1.02	4 47.2	1.88	6.3	
3	14 57.5	15 1.8	54 47.1	1.23	55 3.1	1.43	5 32.0	1.86	7.3	
4	15 6.8	15 12.9	55 21.5	1.63	55 42.2	1.82	6 16.7	1.87	8.3	
5	15 18.7	15 25.5	56 5.1	1.99	56 30.0	2.15	7 2.0	1.91	9.3	
6	15 32.7	15 40.3	56 56.6	2.27	57 24.4	2.35	7 48.7	1.99	10.3	
7	15 48.1	15 56.0	57 53.1	2.40	58 22.0	2.39	8 37.6	2.10	11.3	
8	16 3.8	16 11.3	58 50.5	2.34	59 18.1	2.23	9 29.5	2.23	12.3	
9	16 18.3	16 24.7	59 44.0	2.05	60 7.3	1.82	10 24.9	2.39	13.3	
10	16 30.2	16 34.7	60 27.6	1.53	60 44.2	1.21	11 23.8	2.52	14.3	
11	16 38.1	16 40.3	60 56.6	0.85	61 4.5	+0.47	12 25.4	2.60	15.3	
12	16 41.1	16 40.8	61 7.8	+0.08	61 6.4	-0.31	13 28.1	2.60	16.3	
13	16 39.1	16 36.3	61 0.4	-0.68	60 50.1	1.02	14 29.7	2.52	17.3	
14	16 32.5	16 27.7	60 36.0	1.31	60 18.6	1.56	15 28.9	2.40	18.3	
15	16 22.3	16 16.3	59 58.5	1.76	59 36.4	1.90	16 24.6	2.25	19.3	
16	16 9.8	16 3.2	59 12.9	1.99	58 48.5	2.04	17 17.1	2.13	20.3	
17	15 56.5	15 49.9	58 23.9	2.04	57 59.5	2.01	18 6.8	2.03	21.3	
18	15 43.4	15 37.1	57 35.7	1.95	57 12.7	1.87	18 54.7	1.96	22.3	
19	15 31.1	15 25.5	56 50.7	1.78	56 30.1	1.67	19 41.4	1.93	23.3	
20	15 20.2	15 15.4	56 10.7	1.56	55 52.7	1.44	20 27.7	1.93	24.3	
21	15 10.8	15 6.7	55 36.1	1.33	55 20.9	1.21	21 14.2	1.95	25.3	
22	15 2.9	14 59.5	55 7.0	1.10	54 54.5	0.99	22 1.1	1.97	26.3	
23	14 56.4	14 53.7	54 43.2	0.89	54 33.2	0.79	22 48.7	1.99	27.3	
24	14 51.3	14 49.2	54 24.4	0.68	54 16.8	0.58	23 36.6	2.00	28.3	
25	14 47.5	14 46.1	54 10.4	0.49	54 5.1	0.39	6		29.3	
26	14 44.9	14 44.2	54 1.1	0.29	53 58.2	-0.20	0 24.5	1.99	0.5	
27	14 43.8	14 43.8	53 56.7	-0.07	53 56.5	+0.05	1 11.9	1.96	1.5	
28	14 44.1	14 44.9	53 57.9	+0.18	54 0.8	0.31	1 58.5	1.92	2.5	
29	14 46.1	14 47.9	54 5.4	0.46	54 11.8	0.62	2 44.2	1.88	3.5	
30	14 50.1	14 52.9	54 20.1	0.78	54 30.4	0.95	3 28.9	1.85	4.5	
31	14 56.3	15 0.3	54 42.9	1.12	54 57.4	1.30	4 13.1	1.84	5.5	
32	15 4.8	15 10.0	55 14.1	+1.48	55 32.9	+1.66	4 57.2	1.83	6.5	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SUNDAY 1.					TUESDAY 3.				
0	20 33 52.29	2.0165	S. 15° 57' 18.5	6.190	0	22 9 21.00	1.9704	S. 10° 33' 34.3	6.143
1	20 35 53.24	2.0162	15 52 5.0	6.361	1	22 11 19.21	1.9701	10 25 24.2	6.194
2	20 37 54.11	2.0158	15 46 47.2	6.392	2	22 13 17.41	1.9698	10 17 11.0	6.245
3	20 39 54.90	2.0154	15 41 25.2	6.403	3	22 15 15.59	1.9695	10 8 54.8	6.295
4	20 41 55.60	2.0110	15 35 59.0	6.472	4	22 17 13.75	1.9692	10 0 35.5	6.346
5	20 43 56.22	2.0097	15 30 28.6	6.541	5	22 19 11.90	1.9692	9 52 13.3	6.395
6	20 45 56.76	2.0084	15 24 54.1	6.610	6	22 21 10.05	1.9690	9 43 48.1	6.444
7	20 47 57.22	2.0071	15 19 15.5	6.678	7	22 23 8.19	1.9689	9 35 20.0	6.493
8	20 49 57.61	2.0068	15 13 32.8	6.746	8	22 25 6.32	1.9689	9 26 48.9	6.541
9	20 51 57.92	2.0045	15 7 46.0	6.813	9	22 27 4.45	1.9689	9 18 15.0	6.590
10	20 53 58.15	2.0032	15 1 55.2	6.881	10	22 29 2.59	1.9689	9 9 38.2	6.638
11	20 55 58.30	2.0019	14 56 0.3	6.948	11	22 31 0.72	1.9689	9 0 58.6	6.683
12	20 57 58.38	2.0006	14 50 1.4	6.015	12	22 32 58.86	1.9691	8 52 16.2	6.730
13	20 59 58.38	1.9994	14 43 58.5	6.081	13	22 34 57.01	1.9693	8 43 31.0	6.776
14	21 1 58.31	1.9982	14 37 51.7	6.147	14	22 36 55.17	1.9694	8 34 43.1	6.821
15	21 3 58.17	1.9970	14 31 40.9	6.212	15	22 38 53.34	1.9695	8 25 52.5	6.866
16	21 5 57.95	1.9958	14 25 26.2	6.277	16	22 40 51.52	1.9690	8 16 59.2	6.910
17	21 7 57.67	1.9947	14 19 7.6	6.342	17	22 42 49.72	1.9703	8 8 3.3	6.954
18	21 9 57.31	1.9935	14 12 45.2	6.406	18	22 44 47.95	1.9706	7 59 4.7	6.995
19	21 11 56.88	1.9923	14 6 18.9	6.470	19	22 46 46.20	1.9710	7 50 3.5	7.041
20	21 13 56.30	1.9912	13 59 48.8	6.534	20	22 48 44.47	1.9714	7 40 59.8	7.088
21	21 15 55.83	1.9901	13 53 14.9	6.597	21	22 50 42.77	1.9719	7 31 53.6	7.132
22	21 17 55.20	1.9890	13 46 37.2	6.660	22	22 52 41.10	1.9724	7 22 44.8	7.167
23	21 19 54.51	1.9880	S. 13° 39' 55.8	6.723	23	22 54 39.46	1.9730	S. 7° 13' 33.5	7.205
MONDAY 2.					WEDNESDAY 4.				
0	21 21 53.76	1.9870	S. 13° 33' 10.6	6.784	0	22 56 37.86	1.9736	S. 7° 4' 19.8	7.248
1	21 23 52.95	1.9860	13 26 21.7	6.846	1	22 58 36.29	1.9743	6 55 3.6	7.286
2	21 25 52.08	1.9850	13 19 29.2	6.908	2	23 0 34.77	1.9750	6 45 45.1	7.325
3	21 27 51.15	1.9840	13 12 33.0	6.967	3	23 2 33.29	1.9756	6 36 24.2	7.367
4	21 29 50.16	1.9831	13 5 33.2	7.027	4	23 4 31.86	1.9765	6 27 1.1	7.405
5	21 31 49.12	1.9822	12 58 29.8	7.087	5	23 6 30.47	1.9773	6 17 35.6	7.443
6	21 33 48.02	1.9813	12 51 22.9	7.146	6	23 8 29.14	1.9783	6 8 7.8	7.481
7	21 35 46.87	1.9804	12 44 12.4	7.205	7	23 10 27.87	1.9793	5 58 37.8	7.518
8	21 37 45.67	1.9795	12 36 58.3	7.263	8	23 12 26.65	1.9803	5 49 5.7	7.556
9	21 39 44.42	1.9786	12 29 40.8	7.321	9	23 14 25.49	1.9813	5 39 31.4	7.592
10	21 41 43.13	1.9780	12 22 19.8	7.379	10	23 16 24.40	1.9823	5 29 54.9	7.629
11	21 43 41.79	1.9773	12 14 55.3	7.436	11	23 18 23.37	1.9834	5 20 16.3	7.666
12	21 45 40.40	1.9766	12 7 27.4	7.493	12	23 20 22.41	1.9846	5 10 35.7	7.699
13	21 47 38.98	1.9759	11 59 56.1	7.550	13	23 22 21.52	1.9858	5 0 53.0	7.733
14	21 49 37.51	1.9753	11 52 21.4	7.606	14	23 24 20.70	1.9871	4 51 8.3	7.766
15	21 51 36.00	1.9746	11 44 43.4	7.663	15	23 26 19.96	1.9884	4 41 21.6	7.799
16	21 53 34.46	1.9740	11 37 2.0	7.718	16	23 28 19.31	1.9898	4 31 33.1	7.832
17	21 55 32.88	1.9734	11 29 17.3	7.773	17	23 30 18.74	1.9912	4 21 42.5	7.865
18	21 57 31.27	1.9728	11 21 29.3	7.827	18	23 32 18.25	1.9927	4 11 50.1	7.898
19	21 59 29.63	1.9723	11 13 38.1	7.881	19	23 34 17.85	1.9942	4 1 55.9	7.919
20	22 1 27.95	1.9718	11 5 43.7	7.934	20	23 36 17.55	1.9957	3 51 59.8	7.940
21	22 3 26.25	1.9714	10 57 46.1	7.987	21	23 38 17.34	1.9973	3 42 2.0	7.978
22	22 5 24.52	1.9710	10 49 45.3	8.040	22	23 40 17.23	1.9990	3 32 2.4	7.997
23	22 7 22.77	1.9707	10 41 41.4	8.092	23	23 42 17.22	2.0006	3 22 1.1	7.995
24	22 9 21.00	1.9704	S. 10° 33' 34.3	8.143	24	23 44 17.32	2.0025	S. 3° 11' 58.1	7.992

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
THURSDAY 5.					SATURDAY 7.				
0	^h 23 ^m 44 ^s 17.32	2.0026	S. 3° 11' 58.1"	10.082	0	^h 1 ^m 23 ^s 27.16	2.1488	N. 5° 9' 18.7"	10.518
1	23 46 17.52	2.0043	3 1 53.5	10.080	1	1 25 36.27	2.1541	5 19 49.4	10.506
2	23 48 17.84	2.0062	2 51 47.4	10.115	2	1 27 45.65	2.1585	5 30 19.4	10.493
3	23 50 18.27	2.0082	2 41 39.7	10.141	3	1 29 55.29	2.1629	5 40 48.6	10.479
4	23 52 18.82	2.0103	2 31 30.5	10.166	4	1 32 5.20	2.1674	5 51 16.9	10.463
5	23 54 19.49	2.0122	2 21 19.8	10.190	5	1 34 15.38	2.1720	6 1 44.3	10.447
6	23 56 20.28	2.0149	2 11 7.7	10.213	6	1 36 25.84	2.1766	6 12 10.6	10.430
7	23 58 21.20	2.0183	2 0 54.2	10.236	7	1 38 36.57	2.1812	6 22 35.9	10.413
8	0 0 22.24	2.0186	1 50 39.4	10.268	8	1 40 47.58	2.1859	6 33 0.1	10.394
9	0 2 23.42	2.0206	1 40 23.2	10.280	9	1 42 58.87	2.1906	6 43 23.1	10.373
10	0 4 24.73	2.0221	1 30 5.8	10.301	10	1 45 10.45	2.1954	6 53 44.8	10.351
11	0 6 26.18	2.0254	1 19 47.1	10.321	11	1 47 22.31	2.2002	7 4 5.2	10.328
12	0 8 27.78	2.0278	1 9 27.3	10.340	12	1 49 34.47	2.2050	7 14 24.2	10.304
13	0 10 29.52	2.0303	0 59 6.3	10.359	13	1 51 46.92	2.2099	7 24 41.7	10.279
14	0 12 31.41	2.0328	0 48 44.2	10.377	14	1 53 59.66	2.2148	7 34 57.7	10.253
15	0 14 33.45	2.0355	0 38 21.0	10.395	15	1 56 12.70	2.2198	7 45 12.1	10.226
16	0 16 35.65	2.0379	0 27 56.8	10.413	16	1 58 26.04	2.2249	7 55 24.8	10.197
17	0 18 38.00	2.0406	0 17 31.6	10.430	17	2 0 39.68	2.2298	8 5 35.7	10.167
18	0 20 40.52	2.0438	S. 0° 7' 5.4"	10.448	18	2 2 53.62	2.2349	8 15 44.8	10.138
19	0 22 43.20	2.0461	N. 0 3 21.7	10.456	19	2 5 7.87	2.2401	8 25 52.0	10.103
20	0 24 46.05	2.0489	0 13 49.6	10.473	20	2 7 22.43	2.2453	8 35 57.2	10.069
21	0 26 49.07	2.0516	0 24 18.3	10.485	21	2 9 37.30	2.2504	8 46 0.4	10.036
22	0 28 52.27	2.0545	0 34 47.8	10.497	22	2 11 52.48	2.2556	8 56 1.4	9.999
23	0 30 55.64	2.0576	N. 0 45 18.0	10.509	23	2 14 7.98	2.2609	N. 9 6 0.2	9.962
FRIDAY 6.					SUNDAY 8.				
0	0 32 59.20	2.0606	N. 0 55 48.9	10.519	0	2 16 23.79	2.2662	N. 9 15 56.8	9.924
1	0 35 2.94	2.0630	1 6 20.4	10.529	1	2 18 39.92	2.2715	9 25 51.1	9.884
2	0 37 6.87	2.0671	1 16 52.4	10.538	2	2 20 56.37	2.2769	9 35 42.9	9.843
3	0 39 10.99	2.0708	1 27 24.9	10.546	3	2 23 13.14	2.2823	9 45 32.2	9.800
4	0 41 15.30	2.0739	1 37 57.9	10.554	4	2 25 30.24	2.2877	9 55 18.9	9.756
5	0 43 19.81	2.0768	1 48 31.4	10.561	5	2 27 47.66	2.2931	10 5 2.9	9.713
6	0 45 24.52	2.0803	1 59 5.2	10.567	6	2 30 5.41	2.2986	10 14 44.3	9.666
7	0 47 29.43	2.0836	2 9 39.4	10.573	7	2 32 23.49	2.3041	10 24 22.9	9.618
8	0 49 34.55	2.0871	2 20 13.9	10.577	8	2 34 41.90	2.3096	10 33 58.5	9.569
9	0 51 39.88	2.0906	2 30 48.6	10.580	9	2 37 0.64	2.3151	10 43 31.2	9.519
10	0 53 45.42	2.0943	2 41 23.5	10.583	10	2 39 19.71	2.3207	10 53 0.8	9.467
11	0 55 51.18	2.0978	2 51 58.5	10.583	11	2 41 39.12	2.3263	11 2 27.3	9.414
12	0 57 57.16	2.1015	3 2 33.5	10.583	12	2 43 58.86	2.3318	11 11 50.5	9.360
13	1 0 3.26	2.1066	3 13 8.5	10.583	13	2 46 18.94	2.3374	11 21 10.4	9.304
14	1 2 9.79	2.1080	3 23 43.5	10.582	14	2 48 39.35	2.3430	11 30 27.0	9.247
15	1 4 16.44	2.1136	3 34 18.4	10.581	15	2 51 0.10	2.3487	11 39 40.1	9.189
16	1 6 23.33	2.1167	3 44 53.2	10.578	16	2 53 21.19	2.3543	11 48 49.7	9.130
17	1 8 30.45	2.1207	3 55 27.7	10.573	17	2 55 42.62	2.3600	11 57 55.6	9.066
18	1 10 37.81	2.1247	4 6 2.0	10.568	18	2 58 4.39	2.3656	12 6 57.8	9.006
19	1 12 45.41	2.1288	4 16 35.9	10.563	19	3 0 26.50	2.3713	12 15 56.2	8.941
20	1 14 53.26	2.1329	4 27 9.5	10.556	20	3 2 48.94	2.3769	12 24 50.7	8.876
21	1 17 1.35	2.1370	4 37 42.6	10.548	21	3 5 11.72	2.3826	12 33 41.3	8.809
22	1 19 9.70	2.1413	4 48 15.2	10.539	22	3 7 34.85	2.3883	12 42 27.8	8.749
23	1 21 18.30	2.1466	4 58 47.3	10.529	23	3 9 58.32	2.3940	12 51 10.1	8.671
24	1 23 27.16	2.1498	N. 5 9 18.7	10.518	24	3 12 22.13	2.3998	N. 12 59 48.3	8.601

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
MONDAY 9.					WEDNESDAY 11.				
0	3 12 22.13	2.3996	N.12° 59' 48.3	8.601	0	5 13 33.00	2.6263	N.18° 4' 36.6	2.616
1	3 14 46.28	2.4053	13 8 22.2	8.598	1	5 16 10.80	2.6314	18 8 9.6	2.488
2	3 17 10.77	2.4110	13 16 51.6	8.464	2	5 18 48.77	2.6342	18 11 34.6	2.261
3	3 19 35.60	2.4167	13 25 16.6	8.378	3	5 21 26.91	2.6370	18 14 51.8	2.218
4	3 22 0.77	2.4223	13 33 37.0	8.301	4	5 24 5.21	2.6397	18 18 1.0	2.084
5	3 24 26.28	2.4279	13 41 52.8	8.223	5	5 26 43.67	2.6423	18 21 2.0	2.949
6	3 26 52.12	2.4336	13 50 3.8	8.143	6	5 29 22.28	2.6447	18 23 54.9	2.814
7	3 29 18.30	2.4392	13 58 10.1	8.063	7	5 32 1.03	2.6469	18 26 39.6	2.678
8	3 31 44.82	2.4448	14 6 11.4	7.981	8	5 34 39.91	2.6491	18 29 16.2	2.541
9	3 34 11.67	2.4503	14 14 7.7	7.897	9	5 37 18.92	2.6513	18 31 44.5	2.403
10	3 36 38.86	2.4558	14 21 59.0	7.812	10	5 39 58.06	2.6532	18 34 4.6	2.266
11	3 39 6.37	2.4613	14 29 45.1	7.726	11	5 42 37.31	2.6550	18 36 16.3	2.128
12	3 41 34.22	2.4668	14 37 26.0	7.637	12	5 45 16.66	2.6567	18 38 19.8	1.989
13	3 44 2.40	2.4723	14 45 1.6	7.540	13	5 47 56.12	2.6584	18 40 15.0	1.850
14	3 46 30.90	2.4778	14 52 31.7	7.457	14	5 50 35.67	2.6599	18 42 1.8	1.710
15	3 48 59.73	2.4833	14 59 56.3	7.364	15	5 53 15.31	2.6613	18 43 40.2	1.570
16	3 51 28.88	2.4888	15 7 15.4	7.270	16	5 55 55.02	2.6626	18 45 10.2	1.430
17	3 53 58.35	2.4938	15 14 28.8	7.176	17	5 58 34.80	2.6638	18 46 31.8	1.289
18	3 56 28.14	2.4991	15 21 36.5	7.080	18	6 1 14.65	2.6645	18 47 44.9	1.148
19	3 58 58.24	2.5043	15 28 38.3	6.982	19	6 3 54.55	2.6654	18 48 49.5	1.007
20	4 1 28.66	2.5096	15 35 34.3	6.883	20	6 6 34.50	2.6661	18 49 45.7	0.866
21	4 3 59.39	2.5148	15 42 24.2	6.784	21	6 9 14.49	2.6668	18 50 33.4	0.724
22	4 6 30.43	2.5198	15 49 8.1	6.680	22	6 11 54.52	2.6673	18 51 12.6	0.583
23	4 9 1.77	2.5248	N.15 55 45.9	6.578	23	6 14 34.57	2.6677	N.18 51 43.3	0.440
TUESDAY 10.					THURSDAY 12.				
0	4 11 33.41	2.5298	N.16 2 17.4	6.474	0	6 17 14.64	2.6679	N.18 52 5.4	0.298
1	4 14 5.35	2.5348	16 8 42.7	6.368	1	6 19 54.72	2.6680	18 52 19.0	0.156
2	4 16 37.59	2.5397	16 15 1.5	6.261	2	6 22 34.80	2.6680	18 52 24.1	0.014
3	4 19 10.12	2.5446	16 21 13.9	6.153	3	6 25 14.88	2.6679	18 52 20.7	0.138
4	4 21 42.94	2.5493	16 27 19.7	6.043	4	6 27 54.95	2.6677	18 52 8.8	0.370
5	4 24 16.04	2.5540	16 33 18.9	5.932	5	6 30 35.00	2.6673	18 51 48.3	0.412
6	4 26 49.42	2.5587	16 39 11.5	5.820	6	6 33 15.02	2.6667	18 51 19.3	0.554
7	4 29 23.08	2.5633	16 44 57.3	5.707	7	6 35 55.00	2.6660	18 50 41.8	0.696
8	4 31 57.01	2.5678	16 50 36.3	5.593	8	6 38 34.94	2.6652	18 49 55.8	0.838
9	4 34 31.21	2.5723	16 56 8.4	5.477	9	6 41 14.83	2.6643	18 49 1.3	0.979
10	4 37 5.67	2.5768	17 1 33.5	5.360	10	6 43 54.66	2.6633	18 47 58.3	1.120
11	4 39 40.39	2.5808	17 6 51.6	5.242	11	6 46 34.43	2.6623	18 46 46.9	1.261
12	4 42 15.36	2.5850	17 12 2.5	5.123	12	6 49 14.13	2.6610	18 45 27.0	1.402
13	4 44 50.58	2.5891	17 17 6.3	5.003	13	6 51 53.75	2.6596	18 43 58.7	1.543
14	4 47 26.05	2.5931	17 22 2.8	4.882	14	6 54 33.28	2.6580	18 42 22.0	1.683
15	4 50 1.76	2.5971	17 26 52.0	4.760	15	6 57 12.72	2.6564	18 40 36.9	1.821
16	4 52 37.70	2.6009	17 31 33.9	4.636	16	6 59 52.05	2.6546	18 38 43.5	1.960
17	4 55 13.87	2.6047	17 36 8.3	4.513	17	7 2 31.28	2.6529	18 36 41.7	2.098
18	4 57 50.26	2.6084	17 40 35.3	4.387	18	7 5 10.39	2.6508	18 34 31.7	2.236
19	5 0 26.87	2.6120	17 44 54.7	4.260	19	7 7 49.38	2.6488	18 32 13.4	2.373
20	5 3 3.70	2.6154	17 49 6.5	4.133	20	7 10 28.24	2.6468	18 29 46.9	2.510
21	5 5 40.73	2.6188	17 53 10.7	4.005	21	7 13 6.97	2.6443	18 27 12.2	2.647
22	5 8 17.96	2.6221	17 57 7.1	3.876	22	7 15 45.55	2.6418	18 24 29.3	2.783
23	5 10 55.39	2.6253	18 0 55.8	3.746	23	7 18 23.98	2.6393	18 21 38.3	2.918
24	5 13 33.00	2.6283	N.18 4 36.6	3.615	24	7 21 2.26	2.6366	N.18 18 39.2	3.053

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
FRIDAY 13.					SUNDAY 15.				
0	7 21 2.26	2.6366	N.18 18 39.2	2.092	0	9 22 58.94	2.4220	N.13 35 50.3	8.262
1	7 23 40.37	2.6338	18 15 32.1	2.186	1	9 25 24.16	2.4176	13 27 31.0	8.360
2	7 26 18.32	2.6310	18 12 16.9	2.318	2	9 27 49.05	2.4122	13 19 7.1	8.437
3	7 28 56.09	2.6281	18 8 53.9	2.450	3	9 30 13.62	2.4068	13 10 38.6	8.513
4	7 31 33.69	2.6250	18 5 22.9	2.581	4	9 32 37.87	2.4014	13 2 5.6	8.666
5	7 34 11.10	2.6219	18 1 44.1	2.712	5	9 35 1.80	2.3961	12 53 28.3	8.666
6	7 36 48.32	2.6186	17 57 57.4	2.842	6	9 37 25.40	2.3907	12 44 46.6	8.729
7	7 39 25.31	2.6163	17 54 3.0	2.971	7	9 39 48.69	2.3854	12 36 0.7	8.800
8	7 42 2.15	2.6118	17 50 0.9	4.099	8	9 42 11.65	2.3800	12 27 10.6	8.869
9	7 44 38.76	2.6063	17 45 51.1	4.226	9	9 44 34.29	2.3747	12 18 16.5	8.936
10	7 47 15.15	2.6047	17 41 33.8	4.362	10	9 46 56.61	2.3693	12 9 18.3	9.002
11	7 49 51.32	2.6010	17 37 8.9	4.477	11	9 49 18.61	2.3640	12 0 16.2	9.067
12	7 52 27.27	2.5972	17 32 36.6	4.601	12	9 51 40.29	2.3587	11 51 10.3	9.130
13	7 55 2.99	2.5933	17 27 56.8	4.724	13	9 54 1.65	2.3534	11 42 0.6	9.192
14	7 57 38.47	2.5893	17 23 9.7	4.846	14	9 56 22.70	2.3482	11 32 47.3	9.253
15	8 0 13.71	2.5853	17 18 15.3	4.967	15	9 58 43.44	2.3430	11 23 30.4	9.312
16	8 2 48.71	2.5812	17 13 13.7	5.087	16	10 1 3.86	2.3378	11 14 9.9	9.370
17	8 5 23.46	2.5770	17 8 4.9	5.208	17	10 3 23.97	2.3326	11 4 46.0	9.427
18	8 7 57.95	2.5728	17 2 49.1	5.323	18	10 5 43.77	2.3274	10 55 18.7	9.492
19	8 10 32.19	2.5685	16 57 26.2	5.440	19	10 8 3.26	2.3222	10 45 48.2	9.556
20	8 13 6.17	2.5641	16 51 56.3	5.566	20	10 10 22.43	2.3170	10 36 14.4	9.609
21	8 15 39.89	2.5597	16 46 19.5	5.670	21	10 12 41.30	2.3119	10 26 37.5	9.641
22	8 18 13.33	2.5551	16 40 35.9	5.783	22	10 14 59.86	2.3068	10 16 57.5	9.692
23	8 20 46.50	2.5506	N.16 34 45.5	5.893	23	10 17 18.12	2.3018	N.10 7 14.5	9.741
SATURDAY 14.					MONDAY 16.				
0	8 23 19.38	2.5459	N.16 28 48.5	6.006	0	10 19 36.08	2.2968	N. 9 57 28.6	9.788
1	8 25 51.99	2.5412	16 22 44.8	6.116	1	10 21 53.74	2.2918	9 47 39.9	9.834
2	8 28 24.32	2.5365	16 16 34.6	6.224	2	10 24 11.10	2.2869	9 37 48.5	9.879
3	8 30 56.37	2.5317	16 10 17.9	6.331	3	10 26 28.17	2.2820	9 27 54.4	9.923
4	8 33 28.12	2.5268	16 3 54.9	6.437	4	10 28 44.94	2.2771	9 17 57.7	9.976
5	8 35 59.58	2.5218	15 57 25.5	6.542	5	10 31 1.42	2.2722	9 7 58.5	10.008
6	8 38 30.74	2.5169	15 50 49.9	6.646	6	10 33 17.61	2.2675	8 57 56.8	10.048
7	8 41 1.61	2.5120	15 44 8.1	6.748	7	10 35 33.51	2.2627	8 47 52.7	10.088
8	8 43 32.18	2.5070	15 37 20.2	6.849	8	10 37 49.13	2.2580	8 37 46.3	10.126
9	8 46 2.45	2.5019	15 30 26.3	6.948	9	10 40 4.47	2.2533	8 27 37.7	10.162
10	8 48 32.41	2.4968	15 23 26.5	7.046	10	10 42 19.52	2.2486	8 17 26.9	10.197
11	8 51 2.06	2.4917	15 16 20.8	7.143	11	10 44 34.30	2.2440	8 7 14.0	10.232
12	8 53 31.41	2.4865	15 9 9.3	7.239	12	10 46 48.79	2.2394	7 56 59.1	10.266
13	8 56 0.45	2.4813	15 1 52.1	7.333	13	10 49 3.02	2.2349	7 46 42.2	10.297
14	8 58 29.17	2.4761	14 54 29.3	7.426	14	10 51 16.98	2.2304	7 36 23.5	10.328
15	9 0 57.58	2.4708	14 47 1.0	7.518	15	10 53 30.67	2.2259	7 26 2.9	10.358
16	9 3 25.67	2.4656	14 39 27.2	7.606	16	10 55 44.09	2.2216	7 15 40.6	10.386
17	9 5 53.45	2.4603	14 31 48.0	7.697	17	10 57 57.25	2.2173	7 5 16.6	10.413
18	9 8 20.91	2.4550	14 24 3.6	7.785	18	11 0 10.16	2.2130	6 54 51.0	10.439
19	9 10 48.05	2.4497	14 16 13.9	7.871	19	11 2 22.81	2.2087	6 44 23.9	10.464
20	9 13 14.87	2.4444	14 8 19.1	7.956	20	11 4 35.20	2.2045	6 33 55.3	10.488
21	9 15 41.37	2.4390	14 0 19.2	8.039	21	11 6 47.34	2.2003	6 23 25.3	10.511
22	9 18 7.55	2.4337	13 52 14.4	8.121	22	11 8 59.24	2.1962	6 12 54.0	10.533
23	9 20 33.41	2.4283	13 44 4.7	8.202	23	11 11 10.89	2.1922	6 2 21.4	10.554
24	9 22 58.94	2.4230	N.13 35 50.3	8.282	24	11 13 22.30	2.1882	N. 5 51 47.6	10.574

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
TUESDAY 17.					THURSDAY 19.				
0	11 13 22.30	2.1882	N. 5 51' 47.6"	10.574	0	12 54 46.25	2.0072	S. 2 40' 2.3"	10.417
1	11 15 33.47	2.1842	5 41 12.6	10.503	1	12 56 49.64	2.0066	2 50 26.6	10.393
2	11 17 44.40	2.1803	5 30 36.5	10.611	2	12 58 52.94	2.0043	3 0 49.4	10.368
3	11 19 55.10	2.1764	5 19 59.4	10.627	3	13 0 56.16	2.0019	3 11 10.7	10.343
4	11 22 5.57	2.1725	5 9 21.3	10.643	4	13 2 59.29	2.0016	3 21 30.5	10.314
5	11 24 15.81	2.1688	4 58 42.3	10.687	5	13 5 2.35	2.0004	3 31 48.7	10.280
6	11 26 25.83	2.1651	4 48 2.5	10.671	6	13 7 5.34	2.0192	3 42 5.3	10.263
7	11 28 35.63	2.1615	4 37 21.9	10.683	7	13 9 8.25	2.0180	3 52 20.2	10.235
8	11 30 45.21	2.1579	4 26 40.5	10.694	8	13 11 11.10	2.0160	4 2 33.5	10.206
9	11 32 54.58	2.1543	4 15 58.5	10.705	9	13 13 13.88	2.0148	4 12 45.0	10.177
10	11 35 3.73	2.1508	4 5 15.9	10.716	10	13 15 16.60	2.0148	4 22 54.7	10.147
11	11 37 12.67	2.1473	3 54 32.8	10.723	11	13 17 19.26	2.0139	4 33 2.6	10.117
12	11 39 21.40	2.1440	3 43 49.2	10.730	12	13 19 21.87	2.0130	4 43 8.7	10.086
13	11 41 29.94	2.1407	3 33 5.2	10.737	13	13 21 24.42	2.0121	4 53 12.9	10.054
14	11 43 38.28	2.1374	3 22 20.8	10.743	14	13 23 26.92	2.0112	5 3 15.2	10.021
15	11 45 46.42	2.1341	3 11 36.1	10.747	15	13 25 29.37	2.0104	5 13 15.5	9.988
16	11 47 54.37	2.1309	3 0 51.2	10.751	16	13 27 31.77	2.0097	5 23 13.8	9.954
17	11 50 2.13	2.1278	2 50 6.1	10.753	17	13 29 34.13	2.0090	5 33 10.0	9.920
18	11 52 9.70	2.1247	2 39 20.8	10.754	18	13 31 36.45	2.0083	5 43 4.2	9.886
19	11 54 17.09	2.1217	2 28 35.5	10.755	19	13 33 38.73	2.0077	5 52 56.2	9.849
20	11 56 24.30	2.1187	2 17 50.2	10.756	20	13 35 40.97	2.0071	6 2 46.0	9.812
21	11 58 31.34	2.1158	2 7 4.9	10.755	21	13 37 43.18	2.0065	6 12 33.6	9.775
22	12 0 38.20	2.1129	1 56 19.6	10.753	22	13 39 45.35	2.0060	6 22 19.0	9.737
23	12 2 44.89	2.1101	N. 1 45 34.5	10.750	23	13 41 47.50	2.0056	S. 6 32 2.1	9.699
WEDNESDAY 18.					FRIDAY 20.				
0	12 4 51.41	2.1074	N. 1 34 49.4	10.747	0	13 43 49.61	2.0052	S. 6 41 42.9	9.660
1	12 6 57.77	2.1047	1 24 4.7	10.743	1	13 45 51.71	2.0048	6 51 21.3	9.620
2	12 9 3.97	2.1020	1 13 20.3	10.738	2	13 47 53.78	2.0045	7 0 57.3	9.580
3	12 11 10.01	2.0994	1 2 36.2	10.733	3	13 49 55.84	2.0043	7 10 30.9	9.539
4	12 13 15.90	2.0969	0 51 52.5	10.725	4	13 51 57.88	2.0039	7 20 2.0	9.497
5	12 15 21.64	2.0944	0 41 9.2	10.717	5	13 53 59.91	2.0037	7 29 30.6	9.455
6	12 17 27.23	2.0920	0 30 26.5	10.708	6	13 56 1.92	2.0036	7 38 56.6	9.412
7	12 19 32.68	2.0896	0 19 44.3	10.698	7	13 58 3.92	2.0033	7 48 20.0	9.368
8	12 21 37.98	2.0873	N. 0 9 2.8	10.687	8	14 0 5.92	2.0032	7 57 40.8	9.324
9	12 23 43.15	2.0850	S. 0 1 38.1	10.676	9	14 2 7.91	2.0031	8 6 58.9	9.279
10	12 25 48.18	2.0828	0 12 18.3	10.664	10	14 4 9.89	2.0031	8 16 14.3	9.234
11	12 27 53.08	2.0807	0 22 57.8	10.653	11	14 6 11.87	2.0031	8 25 27.0	9.188
12	12 29 57.85	2.0786	0 33 36.5	10.639	12	14 8 13.86	2.0032	8 34 36.9	9.143
13	12 32 2.50	2.0765	0 44 14.3	10.624	13	14 10 15.85	2.0032	8 43 44.0	9.096
14	12 34 7.03	2.0745	0 54 51.3	10.609	14	14 12 17.84	2.0033	8 52 48.3	9.047
15	12 36 11.44	2.0725	1 5 27.3	10.593	15	14 14 19.84	2.0034	9 1 49.7	8.999
16	12 38 15.73	2.0705	1 16 2.4	10.576	16	14 16 21.85	2.0036	9 10 48.2	8.950
17	12 40 19.91	2.0686	1 26 36.5	10.559	17	14 18 23.87	2.0036	9 19 43.7	8.901
18	12 42 23.98	2.0670	1 37 9.5	10.541	18	14 20 25.90	2.0036	9 28 36.3	8.851
19	12 44 27.94	2.0652	1 47 41.3	10.521	19	14 22 27.94	2.0042	9 37 25.8	8.800
20	12 46 31.80	2.0635	1 58 12.0	10.501	20	14 24 30.00	2.0045	9 46 12.3	8.749
21	12 48 35.56	2.0618	2 8 41.5	10.481	21	14 26 32.07	2.0048	9 54 55.7	8.697
22	12 50 39.22	2.0602	2 19 9.7	10.460	22	14 28 34.17	2.0051	10 3 36.0	8.645
23	12 52 42.79	2.0587	2 29 36.7	10.439	23	14 30 36.29	2.0055	10 12 13.1	8.593
24	12 54 46.25	2.0573	S. 2 40 2.3	10.417	24	14 32 38.42	2.0059	S. 10 20 47.1	8.540

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
SATURDAY 21.					MONDAY 23.				
0	14 32 38.42	2.0350	S. 10° 20' 47.1	8.540	0	16 11 9.85	2.0733	S. 15° 59' 13.2	5.379
1	14 34 40.59	2.0363	10 29 17.8	8.486	1	16 13 14.28	2.0743	16 4 33.6	5.302
2	14 36 42.78	2.0367	10 37 45.3	8.431	2	16 15 18.76	2.0752	16 9 49.4	5.225
3	14 38 45.00	2.0373	10 46 9.5	8.376	3	16 17 23.29	2.0760	16 15 0.5	5.147
4	14 40 47.24	2.0377	10 54 30.4	8.320	4	16 19 27.88	2.0769	16 20 7.0	5.069
5	14 42 49.51	2.0382	11 2 47.9	8.264	5	16 21 32.51	2.0777	16 25 8.8	4.991
6	14 44 51.82	2.0387	11 11 2.0	8.207	6	16 23 37.20	2.0786	16 30 5.9	4.912
7	14 46 54.16	2.0393	11 19 12.7	8.160	7	16 25 41.94	2.0794	16 34 58.3	4.833
8	14 48 56.53	2.0398	11 27 20.0	8.092	8	16 27 46.73	2.0802	16 39 46.0	4.784
9	14 50 58.94	2.0404	11 35 23.7	8.034	9	16 29 51.57	2.0810	16 44 28.8	4.674
10	14 53 1.38	2.0411	11 43 24.0	7.975	10	16 31 56.45	2.0819	16 49 6.9	4.604
11	14 55 3.86	2.0418	11 51 20.7	7.916	11	16 34 1.39	2.0827	16 53 40.2	4.514
12	14 57 6.39	2.0424	11 59 13.9	7.866	12	16 36 6.36	2.0835	16 58 8.5	4.434
13	14 59 8.95	2.0431	12 7 3.4	7.796	13	16 38 11.39	2.0842	17 2 32.1	4.353
14	15 1 11.56	2.0438	12 14 49.3	7.736	14	16 40 16.46	2.0850	17 6 50.8	4.273
15	15 3 14.21	2.0446	12 22 31.5	7.673	15	16 42 21.58	2.0857	17 11 4.7	4.190
16	15 5 16.90	2.0452	12 30 10.1	7.611	16	16 44 26.74	2.0864	17 15 13.6	4.108
17	15 7 19.63	2.0459	12 37 44.9	7.548	17	16 46 31.94	2.0871	17 19 17.6	4.026
18	15 9 22.41	2.0467	12 45 15.9	7.485	18	16 48 37.19	2.0878	17 23 16.7	3.944
19	15 11 25.24	2.0475	12 52 43.1	7.422	19	16 50 42.47	2.0884	17 27 10.8	3.861
20	15 13 28.11	2.0483	13 0 6.5	7.358	20	16 52 47.80	2.0891	17 31 0.0	3.778
21	15 15 31.03	2.0491	13 7 26.0	7.294	21	16 54 53.17	2.0898	17 34 44.2	3.695
22	15 17 34.00	2.0499	13 14 41.7	7.229	22	16 56 58.57	2.0904	17 38 23.4	3.612
23	15 19 37.02	2.0506	S. 13° 21' 53.4	7.163	23	16 59 4.01	2.0910	S. 17° 41' 57.6	3.528
SUNDAY 22.					TUESDAY 24.				
0	15 21 40.08	2.0516	S. 13° 29' 1.2	7.097	0	17 1 9.48	2.0916	S. 17° 45' 26.8	3.444
1	15 23 43.20	2.0525	13 36 5.0	7.030	1	17 3 14.99	2.0922	17 48 50.9	3.360
2	15 25 46.38	2.0533	13 43 4.8	6.963	2	17 5 20.54	2.0927	17 52 10.0	3.276
3	15 27 49.60	2.0542	13 50 0.6	6.896	3	17 7 26.11	2.0932	17 55 23.9	3.191
4	15 29 52.88	2.0550	13 56 52.3	6.828	4	17 9 31.72	2.0937	17 58 32.8	3.106
5	15 31 56.21	2.0559	14 3 39.9	6.760	5	17 11 37.36	2.0942	18 1 36.6	3.021
6	15 33 59.59	2.0568	14 10 23.4	6.691	6	17 13 43.02	2.0947	18 4 35.3	2.936
7	15 36 3.03	2.0578	14 17 2.8	6.622	7	17 15 48.71	2.0951	18 7 28.9	2.850
8	15 38 6.52	2.0586	14 23 38.0	6.552	8	17 17 54.43	2.0955	18 10 17.4	2.765
9	15 40 10.06	2.0595	14 30 9.0	6.482	9	17 20 0.17	2.0958	18 13 0.7	2.679
10	15 42 13.66	2.0604	14 36 35.8	6.411	10	17 22 5.93	2.0962	18 15 38.9	2.593
11	15 44 17.32	2.0614	14 42 58.3	6.340	11	17 24 11.71	2.0965	18 18 11.9	2.507
12	15 46 21.02	2.0623	14 49 16.7	6.269	12	17 26 17.51	2.0969	18 20 39.8	2.421
13	15 48 24.79	2.0633	14 55 30.7	6.197	13	17 28 23.33	2.0973	18 23 2.4	2.334
14	15 50 28.61	2.0642	15 1 40.3	6.126	14	17 30 29.17	2.0974	18 25 19.9	2.248
15	15 52 32.49	2.0651	15 7 45.6	6.052	15	17 32 35.02	2.0976	18 27 32.1	2.161
16	15 54 36.42	2.0660	15 13 46.5	5.979	16	17 34 40.88	2.0978	18 29 39.2	2.074
17	15 56 40.41	2.0669	15 19 43.0	5.905	17	17 36 46.75	2.0980	18 31 41.1	1.987
18	15 58 44.45	2.0678	15 25 35.1	5.830	18	17 38 52.64	2.0982	18 33 37.7	1.900
19	16 0 48.55	2.0688	15 31 22.7	5.757	19	17 40 58.53	2.0983	18 35 29.1	1.813
20	16 2 52.70	2.0697	15 37 5.9	5.682	20	17 43 4.43	2.0984	18 37 15.3	1.726
21	16 4 56.91	2.0706	15 42 44.5	5.607	21	17 45 10.34	2.0985	18 38 56.2	1.638
22	16 7 1.17	2.0715	15 48 18.7	5.531	22	17 47 16.25	2.0986	18 40 31.9	1.551
23	16 9 5.49	2.0724	15 53 48.2	5.455	23	17 49 22.16	2.0988	18 42 2.4	1.463
24	16 11 9.85	2.0733	S. 15° 59' 13.2	5.379	24	17 51 28.07	2.0988	S. 18° 43' 27.7	1.376

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.	Hour.	Right Ascension.	Diff. for 1 m.	Declination.	Diff. for 1 m.
WEDNESDAY 25.					FRIDAY 27.				
0	17 51 28.07	2.0988	S.18 43 27.7	1.376	0	19 31 38.78	2.0654	S.18 9 11.3	2.759
1	17 53 33.98	2.0988	18 44 47.6	1.388	1	19 33 42.66	2.0641	18 6 23.3	2.841
2	17 55 39.88	2.0984	18 46 2.3	1.391	2	19 35 46.47	2.0628	18 3 30.4	2.923
3	17 57 45.78	2.0983	18 47 11.7	1.113	3	19 37 50.20	2.0614	18 0 32.6	3.004
4	17 59 51.67	2.0983	18 48 15.9	1.026	4	19 39 53.84	2.0601	17 57 29.9	3.085
5	18 1 57.55	2.0980	18 49 14.8	0.937	5	19 41 57.41	2.0588	17 54 22.4	3.165
6	18 4 3.43	2.0979	18 50 8.4	0.880	6	19 44 0.89	2.0574	17 51 10.1	3.246
7	18 6 9.30	2.0977	18 50 56.8	0.762	7	19 46 4.29	2.0560	17 47 52.9	3.326
8	18 8 15.15	2.0974	18 51 39.9	0.676	8	19 48 7.61	2.0546	17 44 31.0	3.406
9	18 10 20.98	2.0971	18 52 17.7	0.587	9	19 50 10.84	2.0532	17 41 4.3	3.485
10	18 12 26.80	2.0968	18 52 50.3	0.499	10	19 52 13.99	2.0518	17 37 32.9	3.564
11	18 14 32.60	2.0965	18 53 17.6	0.411	11	19 54 17.05	2.0503	17 33 56.7	3.643
12	18 16 38.38	2.0962	18 53 39.7	0.323	12	19 56 20.01	2.0488	17 30 15.8	3.721
13	18 18 44.14	2.0958	18 53 56.4	0.235	13	19 58 22.89	2.0473	17 26 30.2	3.799
14	18 20 49.87	2.0953	18 54 7.9	0.148	14	20 0 25.69	2.0458	17 22 39.9	3.877
15	18 22 55.57	2.0948	18 54 14.1	0.060	15	20 2 28.39	2.0443	17 18 45.0	3.954
16	18 25 1.25	2.0944	18 54 15.1	0.028	16	20 4 31.01	2.0428	17 14 45.4	4.031
17	18 27 6.90	2.0939	18 54 10.8	0.116	17	20 6 33.53	2.0413	17 10 41.2	4.108
18	18 29 12.52	2.0934	18 54 1.2	0.203	18	20 8 35.97	2.0398	17 6 32.4	4.185
19	18 31 18.11	2.0928	18 53 46.4	0.290	19	20 10 38.31	2.0383	17 2 19.0	4.261
20	18 33 23.66	2.0923	18 53 26.4	0.378	20	20 12 40.56	2.0368	16 58 1.1	4.337
21	18 35 29.18	2.0917	18 53 1.1	0.465	21	20 14 42.72	2.0353	16 53 38.6	4.413
22	18 37 34.66	2.0910	18 52 30.6	0.552	22	20 16 44.78	2.0337	16 49 11.7	4.487
23	18 39 40.10	2.0903	S.18 51 54.9	0.638	23	20 18 46.75	2.0321	S.16 44 40.2	4.563
THURSDAY 26.					SATURDAY 28.				
0	18 41 45.49	2.0897	S.18 51 14.0	0.725	0	20 20 48.62	2.0306	S.16 40 4.4	4.639
1	18 43 50.85	2.0890	18 50 27.8	0.812	1	20 22 50.40	2.0289	16 35 24.1	4.709
2	18 45 56.17	2.0882	18 49 36.5	0.899	2	20 24 52.09	2.0273	16 30 39.3	4.783
3	18 48 1.44	2.0874	18 48 40.0	0.985	3	20 26 53.68	2.0257	16 25 50.2	4.855
4	18 50 6.66	2.0866	18 47 38.3	1.072	4	20 28 55.17	2.0242	16 20 56.7	4.927
5	18 52 11.83	2.0858	18 46 31.4	1.158	5	20 30 56.57	2.0226	16 15 58.9	4.999
6	18 54 16.95	2.0850	18 45 19.3	1.244	6	20 32 57.88	2.0210	16 10 56.8	5.071
7	18 56 22.02	2.0841	18 44 2.1	1.330	7	20 34 59.09	2.0193	16 5 50.4	5.143
8	18 58 27.04	2.0832	18 42 39.7	1.416	8	20 37 0.20	2.0178	16 0 39.7	5.213
9	19 0 32.00	2.0823	18 41 12.2	1.501	9	20 39 1.22	2.0163	15 55 24.8	5.283
10	19 2 36.91	2.0813	18 39 39.5	1.587	10	20 41 2.15	2.0147	15 50 5.7	5.353
11	19 4 41.76	2.0803	18 38 1.8	1.673	11	20 43 2.98	2.0130	15 44 42.4	5.423
12	19 6 46.53	2.0793	18 36 19.0	1.757	12	20 45 3.71	2.0114	15 39 15.0	5.493
13	19 8 51.26	2.0783	18 34 31.0	1.843	13	20 47 4.35	2.0098	15 33 43.4	5.563
14	19 10 55.92	2.0773	18 32 38.0	1.928	14	20 49 4.89	2.0083	15 28 7.6	5.633
15	19 13 0.52	2.0761	18 30 39.9	2.010	15	20 51 5.34	2.0068	15 22 27.8	5.698
16	19 15 5.05	2.0750	18 28 36.8	2.094	16	20 53 5.70	2.0053	15 16 43.9	5.766
17	19 17 9.51	2.0738	18 26 28.6	2.178	17	20 55 5.96	2.0038	15 10 56.0	5.833
18	19 19 13.91	2.0727	18 24 15.4	2.262	18	20 57 6.13	2.0020	15 5 4.0	5.900
19	19 21 18.24	2.0716	18 21 57.1	2.346	19	20 59 6.20	2.0004	14 59 8.0	5.966
20	19 23 22.50	2.0704	18 19 33.9	2.429	20	21 1 6.18	1.9988	14 53 8.1	6.033
21	19 25 26.68	2.0691	18 17 5.7	2.513	21	21 3 6.07	1.9973	14 47 4.2	6.097
22	19 27 30.79	2.0679	18 14 32.5	2.596	22	21 5 5.86	1.9958	14 40 56.5	6.163
23	19 29 34.83	2.0667	18 11 54.3	2.677	23	21 7 5.57	1.9943	14 34 44.9	6.226
24	19 31 38.78	2.0654	S.18 9 11.3	2.759	24	21 9 5.17	1.9928	S.14 28 29.5	6.290

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.	Hour.	Right Ascension.	Dif. for 1 m.	Declination.	Dif. for 1 m.
SUNDAY 29.					TUESDAY 31.				
0	21 9 5.17	1.9928	S. 14 28 29.5	6.290	0	22 43 20.88	1.9446	S. 8 21' 45.0	8.807
1	21 11 4.70	1.9918	14 22 10.2	6.383	1	22 45 17.55	1.9443	8 12 55.4	8.847
2	21 13 4.13	1.9908	14 15 47.1	6.416	2	22 47 14.20	1.9440	8 4 3.3	8.887
3	21 15 3.47	1.9893	14 9 20.2	6.479	3	22 49 10.84	1.9438	7 55 8.9	8.926
4	21 17 2.73	1.9886	14 2 49.6	6.541	4	22 51 7.46	1.9437	7 46 12.1	8.966
5	21 19 1.90	1.9884	13 56 15.2	6.603	5	22 53 4.08	1.9436	7 37 13.0	9.003
6	21 21 0.98	1.9840	13 49 37.2	6.664	6	22 55 0.69	1.9436	7 28 11.7	9.041
7	21 22 59.98	1.9836	13 42 55.5	6.726	7	22 56 57.30	1.9435	7 19 8.1	9.079
8	21 24 58.89	1.9812	13 36 10.2	6.788	8	22 58 53.91	1.9436	7 10 2.2	9.116
9	21 26 57.72	1.9798	13 29 21.2	6.846	9	23 0 50.52	1.9436	7 0 54.2	9.152
10	21 28 56.46	1.9784	13 22 28.7	6.906	10	23 2 47.14	1.9437	6 51 44.0	9.188
11	21 30 55.13	1.9771	13 15 32.7	6.964	11	23 4 43.76	1.9438	6 42 31.7	9.223
12	21 32 53.71	1.9757	13 8 33.2	7.023	12	23 6 40.40	1.9440	6 33 17.3	9.258
13	21 34 52.21	1.9744	13 1 30.1	7.080	13	23 8 37.05	1.9443	6 24 0.8	9.293
14	21 36 50.64	1.9731	12 54 23.6	7.138	14	23 10 33.71	1.9445	6 14 42.2	9.328
15	21 38 48.99	1.9718	12 47 13.6	7.196	15	23 12 30.39	1.9448	6 5 21.6	9.359
16	21 40 47.26	1.9705	12 40 0.2	7.252	16	23 14 27.09	1.9452	5 55 59.1	9.392
17	21 42 45.46	1.9693	12 32 43.4	7.308	17	23 16 23.81	1.9456	5 46 34.6	9.424
18	21 44 43.58	1.9681	12 25 23.3	7.363	18	23 18 20.56	1.9460	5 37 8.2	9.456
19	21 46 41.64	1.9670	12 17 59.9	7.418	19	23 20 17.33	1.9464	5 27 39.9	9.487
20	21 48 39.62	1.9658	12 10 33.2	7.473	20	23 22 14.13	1.9469	5 18 9.7	9.518
21	21 50 37.53	1.9647	12 3 3.2	7.527	21	23 24 10.96	1.9475	5 8 37.7	9.548
22	21 52 35.38	1.9635	11 55 30.0	7.581	22	23 26 7.83	1.9482	4 59 4.0	9.578
23	21 54 33.16	1.9624	S. 11 47 53.6	7.634	23	23 28 4.74	1.9489	S. 4 49 28.5	9.607
MONDAY 30.					WEDNESDAY, JANUARY 1, 1868.				
0	21 56 30.86	1.9613	S. 11 40 14.1	7.687	0	23 30 1.69	1.9496	S. 4 39 51.3	9.636
1	21 58 28.51	1.9603	11 32 31.3	7.739	PHASES OF THE MOON.				
2	22 0 26.10	1.9593	11 24 45.4	7.791					
3	22 2 23.62	1.9583	11 16 56.4	7.843					
4	22 4 21.09	1.9573	11 9 4.4	7.895					
5	22 6 18.50	1.9564	11 1 9.3	7.948	☾ First Quarter, . . . 3 22 20.6 ○ Full Moon, . . . 11 0 10.0 ☾ Last Quarter, . . . 17 15 34.4 ● New Moon, . . . 25 11 39.0				
6	22 8 15.86	1.9555	10 53 11.2	7.999					
7	22 10 13.16	1.9546	10 45 10.1	8.043					
8	22 12 10.41	1.9537	10 37 6.1	8.091					
9	22 14 7.61	1.9529	10 28 59.1	8.140	☾ Perigee, 12 2.3 ☾ Apogee, 27 7.0				
10	22 16 4.76	1.9521	10 20 49.3	8.188					
11	22 18 1.86	1.9513	10 12 36.6	8.235					
12	22 19 58.92	1.9506	10 4 21.2	8.282					
13	22 21 55.94	1.9499	9 56 2.9	8.328					
14	22 23 52.91	1.9493	9 47 41.8	8.374					
15	22 25 49.85	1.9487	9 39 18.0	8.420					
16	22 27 46.75	1.9481	9 30 51.4	8.465					
17	22 29 43.62	1.9475	9 22 22.2	8.509					
18	22 31 40.45	1.9470	9 13 50.3	8.553					
19	22 33 37.25	1.9465	9 5 15.8	8.597					
20	22 35 34.03	1.9460	8 56 38.7	8.640					
21	22 37 30.78	1.9456	8 47 59.0	8.683					
22	22 39 27.50	1.9452	8 39 16.8	8.726					
23	22 41 24.20	1.9449	8 30 32.1	8.768					
24	22 43 20.88	1.9446	S. 8 21 45.0	8.807					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Dist.	III ^h .	P. L. of Dist.	VI ^h .	P. L. of Dist.	IX ^h .	P. L. of Dist.
1	SUN W.	57 57 17	3490	59 17 52	3487	60 38 31	3489	61 59 15	3479
	α Pegasi E.	46 52 47	3681	45 35 8	3679	44 17 59	3709	43 1 22	3743
	α Arietis E.	88 34 51	3209	87 8 53	3206	85 42 53	3204	84 16 49	3202
	Aldebaran E.	121 16 11	3077	119 47 33	3073	118 18 51	3070	116 50 5	3067
2	SUN W.	68 44 14	3460	70 5 34	3443	71 27 2	3436	72 48 30	3426
	α Pegasi E.	36 48 16	3673	35 36 9	4088	34 25 7	4111	33 15 16	4194
	α Arietis E.	77 5 36	3184	75 39 8	3180	74 12 35	3176	72 45 57	3171
	Aldebaran E.	109 25 1	3043	107 55 41	3036	106 26 13	3030	104 56 37	3023
3	SUN W.	79 39 7	3360	81 1 46	3370	82 24 37	3368	83 47 41	3346
	α Aquilæ W.	40 49 9	4243	41 56 55	4160	43 5 59	4084	44 16 16	4013
	α Arietis E.	65 31 18	3145	64 4 3	3139	62 36 41	3133	61 9 12	3129
	Aldebaran E.	97 26 16	2981	95 55 39	2970	94 24 49	2961	92 53 47	2960
4	SUN W.	90 46 37	3281	92 11 11	3266	93 36 2	3251	95 1 11	3236
	α Aquilæ W.	50 23 52	3723	51 40 16	3674	52 57 31	3628	54 15 35	3605
	α Arietis E.	53 50 13	3103	52 22 6	3090	50 53 55	3086	49 25 39	3091
	Aldebaran E.	85 15 1	2890	83 42 29	2876	82 9 40	2862	80 36 33	2846
5	SUN W.	102 11 34	3154	103 38 38	3136	105 6 4	3119	106 33 51	3100
	α Aquilæ W.	60 57 10	3393	62 19 35	3369	63 42 38	3326	65 6 19	3294
	Fomalhaut W.	29 58 29	4406	31 3 43	4246	32 11 26	4103	33 21 26	3973
	Jupiter W.	24 34 51	2630	26 8 40	2612	27 42 52	2705	29 17 27	2776
	α Arietis E.	42 3 45	3003	40 35 26	3007	39 7 13	3105	37 39 9	3116
	Aldebaran E.	72 46 14	2773	71 11 10	2766	69 35 44	2739	67 59 56	2723
	Pollux E.	116 14 56	2861	114 41 47	2842	113 8 14	2824	111 34 17	2806
6	SUN W.	113 58 27	3006	115 28 32	2986	116 59 2	2967	118 29 56	2946
	α Aquilæ W.	72 13 44	3148	73 40 55	3121	75 8 39	3095	76 36 55	3069
	Fomalhaut W.	39 40 11	3489	41 0 47	3416	42 22 45	3349	43 46 0	3284
	Jupiter W.	37 16 23	2684	38 53 24	2665	40 30 51	2646	42 8 43	2627
	α Pegasi E.	27 4 17	4449	28 8 54	4244	29 16 39	4063	30 27 17	3904
	Aldebaran E.	59 55 12	2634	58 17 3	2616	56 38 29	2607	54 59 30	2579
	Pollux E.	103 38 20	2710	102 1 53	2690	100 25 0	2671	98 47 41	2652
7	SUN W.	126 10 38	2849	127 44 2	2830	129 17 51	2810	130 52 6	2792
	α Aquilæ W.	84 5 47	2983	85 36 59	2963	87 8 37	2912	88 40 41	2892
	Fomalhaut W.	50 59 16	3026	52 28 56	2984	53 59 29	2942	55 30 54	2902
	Jupiter W.	50 24 36	2680	52 5 7	2612	53 46 4	2493	55 27 29	2473
	α Pegasi W.	36 55 31	3342	38 18 54	3261	39 43 51	3187	41 10 16	3119
	Aldebaran E.	46 38 7	2484	44 56 31	2465	43 14 28	2446	41 31 58	2427
	Pollux E.	90 34 34	2666	88 54 38	2686	87 14 15	2619	85 33 26	2499
8	α Aquilæ W.	96 26 55	2906	98 1 13	2794	99 35 49	2781	101 10 42	2769
	Jupiter W.	64 1 14	2379	65 45 19	2360	67 29 51	2343	69 14 48	2326
	Fomalhaut W.	63 19 47	2784	64 55 42	2704	66 32 17	2676	68 9 30	2649
	α Pegasi W.	48 41 11	2648	50 14 37	2604	51 49 0	2763	53 24 16	2726
	Aldebaran E.	32 52 48	2334	31 7 38	2316	29 22 2	2308	27 36 0	2291
	Pollux E.	77 2 56	2410	75 19 35	2392	73 35 50	2376	71 51 41	2360
	Regulus E.	112 59 31	2385	111 14 22	2317	109 28 47	2299	107 42 46	2262
9	α Aquilæ W.	109 8 18	2733	110 44 14	2732	112 20 12	2731	113 56 11	2733
	Jupiter W.	78 5 55	2341	79 53 21	2296	81 41 9	2311	83 29 20	2196
	Fomalhaut W.	76 24 5	2332	78 4 32	2512	79 45 28	2484	81 26 50	2475

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of DIST.	XVh.	P. L. of DIST.	XVIIIh.	P. L. of DIST.	XXIh.	P. L. of DIST.
1	SUN W.	63° 20' 3"	3473	64° 40' 57"	3400	66° 1' 56"	3453	67° 23' 2"	3487
	α Pegasi E.	41 45 20	3779	40 29 56	3920	39 15 15	3885	38 1 20	3916
	α Arietis E.	82 50 42	3108	81 24 31	3196	79 58 17	3193	78 31 59	3168
	Aldebaran E.	115 21 15	3063	113 52 20	3069	112 23 20	3064	110 54 14	3048
2	SUN W.	74 10 24	3419	75 32 19	3410	76 54 24	3400	78 16 40	3391
	α Pegasi E.	32 6 45	4391	30 59 44	4400	29 54 23	4327	28 50 55	4277
	α Arietis E.	74 19 13	3166	69 52 23	3162	68 25 28	3165	66 58 26	3151
	Aldebaran E.	103 26 53	3016	101 57 0	3007	100 26 56	2998	98 56 41	2990
3	SUN W.	85 10 59	3334	86 34 31	3321	87 58 18	3308	89 22 20	3295
	α Aquilæ W.	45 27 43	3947	46 40 15	3936	47 53 49	3928	49 8 22	3778
	α Arietis E.	59 41 37	3124	58 13 56	3126	56 46 8	3113	55 18 14	3107
	Aldebaran E.	91 22 31	2939	89 51 1	2927	88 19 17	2915	86 47 17	2903
4	SUN W.	96 26 37	3220	97 52 22	3204	99 18 26	3188	100 44 50	3171
	α Aquilæ W.	55 34 26	3843	56 54 3	3804	58 14 23	3865	59 35 26	3829
	α Arietis E.	47 57 19	3089	46 28 56	3086	45 0 32	3088	43 32 8	3080
	Aldebaran E.	79 3 8	2834	77 29 24	2819	75 55 21	2804	74 20 58	2788
5	SUN W.	108 2 1	3093	109 30 33	3063	110 59 28	3044	112 28 46	3026
	α Aquilæ W.	66 30 37	3264	67 55 31	3233	69 21 1	3204	70 47 6	3176
	Fomalhaut W.	34 33 32	3866	35 47 36	3751	37 3 29	3665	38 21 3	3580
	Jupiter W.	30 52 26	2768	32 27 49	2740	34 3 35	2722	35 39 47	2708
	α Arietis E.	36 11 18	3180	34 43 45	3148	33 16 34	3172	31 49 51	3203
	Aldebaran E.	66 23 46	2705	64 47 13	2687	63 10 16	2670	61 32 56	2652
	Pollux E.	109 59 55	2786	108 25 9	2767	106 49 58	2748	105 14 22	2729
6	SUN W.	120 1 14	2928	121 32 57	2909	123 5 6	2889	124 37 39	2869
	α Aquilæ W.	78 5 42	3044	79 35 0	3021	81 4 47	2997	82 35 3	2975
	Fomalhaut W.	45 10 29	3226	46 36 7	3178	48 2 49	3171	49 30 33	3078
	Jupiter W.	43 47 1	2908	45 25 45	2868	47 4 56	2869	48 44 33	2840
	α Pegasi W.	31 40 33	3765	32 56 12	3642	34 14 1	3582	35 33 50	3431
	Aldebaran E.	53 20 6	2580	51 40 16	2540	49 59 59	2522	48 19 16	2503
	Pollux E.	97 9 56	2682	95 31 45	2612	93 53 7	2593	92 14 3	2575
7	SUN W.	132 26 45	2772	134 1 49	2754	135 37 17	2735	137 13 10	2717
	α Aquilæ W.	90 13 10	2873	91 46 3	2856	93 19 19	2838	94 52 57	2822
	Fomalhaut W.	57 3 10	2886	58 36 13	2881	60 10 1	2797	61 44 33	2768
	Jupiter W.	57 9 20	2434	58 51 38	2435	60 34 23	2416	62 17 35	2397
	α Pegasi W.	42 38 3	3086	44 7 6	2997	45 37 22	2944	47 8 45	2894
	Aldebaran E.	39 49 2	2486	38 5 39	2389	36 21 48	2371	34 37 31	2353
	Pollux E.	83 52 11	2480	82 10 30	2462	80 28 24	2445	78 45 53	2426
8	α Aquilæ W.	102 45 50	2789	104 21 12	2760	105 56 45	2743	107 32 28	2728
	Jupiter W.	71 0 12	2307	72 46 1	2290	74 32 14	2274	76 18 52	2258
	Fomalhaut W.	69 47 18	2624	71 25 41	2589	73 4 38	2575	74 44 7	2554
	α Pegasi W.	55 0 23	2689	56 37 18	2655	58 14 59	2622	59 53 24	2592
	Aldebaran E.	25 49 32	2364	24 2 39	2245	22 15 20	2230	20 27 37	2214
	Pollux E.	70 7 9	2844	68 22 14	2820	66 36 58	2815	64 51 21	2802
	Regulus E.	105 56 20	2264	104 9 28	2247	102 22 11	2231	100 34 29	2214
9	α Aquilæ W.	115 32 8	2787	117 7 59	2744	118 43 41	2733	120 19 10	2706
	Jupiter W.	85 17 53	2182	87 6 47	2169	88 56 0	2157	90 45 34	2144
	Fomalhaut W.	83 8 37	2460	84 50 47	2445	86 33 18	2431	88 16 9	2418

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	α Pegasi W.	61° 32' 30"	2664	63° 12' 15"	2657	64° 52' 37"	2612	66° 33' 34"	2498
	Pollux E.	63 5 24	2289	61 19 8	2277	59 32 34	2206	57 45 44	2256
	Regulus E.	98 46 22	2198	96 57 52	2183	95 8 59	2109	93 19 44	2156
10	Jupiter W.	92 35 26	2133	94 25 35	2122	96 16 1	2111	98 6 43	2102
	Fomalhaut W.	89 59 18	2406	91 42 44	2396	93 26 25	2387	95 10 19	2379
	α Pegasi W.	75 5 59	2391	76 49 47	2375	78 33 57	2362	80 18 27	2348
	α Arietis W.	31 44 14	2291	33 23 22	2283	35 3 49	2463	36 45 26	2439
	Pollux E.	48 48 14	2290	47 0 17	2217	45 12 15	2216	43 24 12	2217
	Regulus E.	84 8 18	2090	82 17 4	2079	80 25 33	2009	78 33 46	2009
11	Jupiter W.	107 23 31	2061	109 15 25	2069	111 7 27	2056	112 59 37	2061
	Fomalhaut W.	103 51 57	2361	105 36 28	2362	107 20 58	2364	109 5 24	2366
	α Pegasi W.	89 5 2	2304	90 50 56	2298	92 36 58	2296	94 23 5	2298
	α Arietis W.	45 27 2	2284	47 13 25	2264	49 0 18	2245	50 47 38	2229
	Pollux E.	31 25 30	2264	32 38 37	2265	30 52 15	2211	29 6 31	2242
	Regulus E.	69 11 30	2022	67 18 30	2017	65 25 22	2012	63 32 7	2008
	Spica E.	122 41 49	2048	120 49 29	2042	118 57 0	2036	117 4 22	2033
12	α Pegasi W.	103 13 51	2202	104 59 48	2208	106 45 36	2216	108 31 13	2226
	α Arietis W.	59 49 22	2176	61 38 25	2172	63 27 35	2168	65 16 51	2164
	Aldebaran W.	26 3 37	2000	27 57 12	2000	29 50 46	2001	31 44 18	2003
	Regulus E.	54 4 43	2000	52 11 9	2002	50 17 38	2003	48 24 9	2006
	Spica E.	107 39 49	2021	105 46 47	2021	103 53 45	2022	102 0 45	2024
13	α Arietis W.	74 23 42	2109	76 12 57	2172	78 2 6	2178	79 51 7	2184
	Aldebaran W.	41 10 49	2026	43 3 45	2032	44 56 30	2038	46 49 5	2046
	Regulus E.	38 57 56	2028	37 5 5	2034	35 12 24	2041	33 19 54	2050
	Spica E.	92 36 53	2044	90 44 28	2061	88 52 13	2068	87 0 9	2086
14	α Arietis W.	88 53 30	2227	90 41 18	2238	92 28 49	2260	94 16 2	2282
	Aldebaran W.	56 8 45	2092	57 59 57	2103	59 50 51	2116	61 41 28	2126
	Pollux W.	15 55 6	2173	17 21 47	2088	18 52 15	2048	20 25 45	2127
	Spica E.	77 43 5	2114	75 52 27	2125	74 2 6	2137	72 12 3	2149
	Saturn E.	115 29 55	2133	113 39 46	2143	111 49 52	2166	110 0 18	2167
	SUN E.	137 48 11	2436	136 5 27	2446	134 22 58	2467	132 40 44	2488
15	α Arietis W.	103 7 12	2235	104 52 20	2261	106 37 5	2268	108 21 25	2281
	Aldebaran W.	70 49 50	2192	72 38 30	2206	74 26 50	2220	76 14 48	2226
	Pollux W.	28 38 30	2600	30 19 43	2484	32 1 19	2472	33 43 12	2463
	Spica E.	63 6 40	2217	61 18 38	2223	59 30 59	2248	57 43 43	2263
	Saturn E.	100 57 2	2232	99 9 22	2246	97 22 3	2260	95 35 5	2276
	SUN E.	124 13 44	2432	122 33 15	2446	120 53 6	2461	119 13 17	2475
16	Aldebaran W.	85 9 10	2209	86 54 56	2226	88 40 19	2241	90 25 19	2256
	Pollux W.	42 14 5	2465	43 56 8	2471	45 38 2	2478	47 19 46	2486
	Spica E.	48 53 13	2246	47 8 21	2264	45 23 55	2282	43 39 54	2401
	Saturn E.	86 45 44	2261	85 0 59	2266	83 16 36	2282	81 32 35	2297
	SUN E.	110 59 24	2484	109 21 42	2470	107 44 22	2487	106 7 24	2503
17	Aldebaran W.	99 4 45	2484	100 47 31	2460	102 29 55	2465	104 11 58	2480
	Pollux W.	55 45 18	2237	57 25 40	2248	59 5 46	2261	60 45 35	2273
	Regulus W.	19 0 0	2444	20 42 32	2456	22 24 44	2472	24 6 36	2487
	Spica E.	35 6 37	2499	33 25 23	2520	31 44 38	2543	30 4 24	2566
	Saturn E.	72 58 9	2477	71 16 23	2492	69 34 59	2507	67 53 55	2524

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XVh.	P. L. of Dist.	XVIIIh.	P. L. of Dist.	XXIh.	P. L. of Dist.
9	α Pegasi W.	68° 15' 4"	2466	69° 57' 5"	2446	71° 39' 36"	2426	73° 22' 35"	2406
	Pollux E.	55 58 39	2246	54 11 20	2237	52 23 47	2230	50 36 4	2226
	Regulus E.	91 30 8	2140	89 40 10	2127	87 49 52	2114	85 59 14	2102
10	Jupiter W.	99 57 39	2093	101 48 49	2086	103 40 12	2077	105 31 46	2070
	Fomalhaut W.	96 54 24	2273	98 38 38	2267	100 23 0	2264	102 7 27	2262
	α Pegasi W.	82 3 16	2337	83 48 22	2326	85 33 43	2317	87 19 17	2310
	α Arietis W.	38 28 5	2400	40 11 40	2385	41 56 5	2385	43 41 14	2368
	Pollux E.	41 36 10	2220	39 48 13	2226	38 0 24	2235	36 12 48	2247
	Regulus E.	76 41 44	2060	74 49 28	2042	72 57 0	2035	71 4 20	2028
11	Jupiter W.	114 51 52	2048	116 44 11	2046	118 36 34	2044	120 29 0	2042
	Fomalhaut W.	110 49 44	2276	112 33 55	2280	114 17 55	2292	116 1 41	2404
	α Pegasi W.	96 9 15	2291	97 55 27	2292	99 41 38	2294	101 27 47	2297
	α Arietis W.	52 35 23	2214	54 23 29	2203	56 11 52	2193	58 0 30	2184
	Pollux E.	27 21 34	2384	25 37 37	2426	23 54 57	2410	22 13 58	2406
	Regulus E.	61 38 45	2005	59 45 19	2003	57 51 49	2001	55 58 17	2000
	Spica E.	115 11 37	2028	113 18 46	2026	111 25 50	2022	109 32 50	2021
12	α Pegasi W.	110 16 36	2336	112 1 43	2348	113 46 32	2362	115 31 1	2379
	α Arietis W.	67 6 13	2163	68 55 37	2163	70 45 0	2164	72 34 22	2165
	Aldebaran W.	33 37 48	2006	35 31 13	2010	37 24 32	2014	39 17 44	2019
	Regulus E.	46 30 42	2008	44 37 20	2012	42 44 5	2017	40 50 57	2021
	Spica E.	100 7 48	2026	98 14 55	2030	96 22 8	2034	94 29 27	2039
13	α Arietis W.	81 39 59	2191	83 28 40	2198	85 17 10	2207	87 5 27	2216
	Aldebaran W.	48 41 28	2064	50 33 38	2062	52 25 35	2072	54 17 17	2081
	Regulus E.	31 27 37	2068	29 35 33	2069	27 43 44	2078	25 52 11	2088
	Spica E.	85 8 16	2074	83 16 37	2082	81 25 11	2092	79 34 0	2103
14	α Arietis W.	96 2 57	2276	97 49 32	2289	99 35 47	2304	101 21 41	2320
	Aldebaran W.	63 31 47	2139	65 21 47	2161	67 11 28	2166	69 0 49	2178
	Pollux W.	22 1 36	2660	23 39 10	2604	25 18 0	2659	26 57 51	2625
	Spica E.	70 22 18	2162	68 32 53	2176	66 43 48	2188	64 55 3	2203
	Saturn E.	108 11 1	2179	106 22 2	2192	104 33 22	2206	102 45 2	2218
	Sun E.	130 58 46	2480	129 17 4	2492	127 35 39	2504	125 54 32	2518
15	α Arietis W.	110 5 19	2405	111 48 47	2424	113 31 48	2443	115 14 22	2463
	Aldebaran W.	78 2 24	2249	79 49 38	2264	81 36 31	2279	83 23 2	2294
	Pollux W.	35 25 17	2458	37 7 29	2457	38 49 43	2468	40 31 56	2460
	Spica E.	55 56 49	2279	54 10 19	2286	52 24 12	2312	50 38 30	2329
	Saturn E.	93 48 29	2290	92 2 15	2304	90 16 22	2320	88 30 52	2336
	Sun E.	117 33 48	2691	115 54 40	2696	114 15 53	2622	112 37 28	2638
16	Aldebaran W.	92 9 57	2271	93 54 13	2287	95 38 6	2403	97 21 37	2419
	Pollux W.	49 1 19	2494	50 42 40	2504	52 23 47	2516	54 4 40	2525
	Spica E.	41 56 20	2419	40 13 13	2426	38 30 33	2466	36 48 21	2478
	Saturn E.	79 48 56	2414	78 5 41	2429	76 22 48	2445	74 40 17	2461
	Sun E.	104 30 48	2719	102 54 34	2721	101 18 43	2753	99 43 13	2769
17	Aldebaran W.	105 53 39	2426	107 34 59	2510	109 15 58	2525	110 56 36	2540
	Pollux W.	62 25 8	2685	64 4 24	2697	65 43 23	2610	67 22 5	2623
	Regulus W.	25 48 7	2602	27 29 18	2616	29 10 10	2630	30 50 42	2644
	Spica E.	28 24 43	2691	26 45 36	2619	25 7 7	2649	23 29 18	2691
	Saturn E.	66 13 15	2629	64 32 56	2664	62 52 58	2669	61 13 21	2685

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.		Noon.	P. L. of DM.	IIIh.	P. L. of DM.	VIh.	P. L. of DM.	IXh.	P. L. of DM.
17	SUN	E.	98° 8' 5"	2786	96° 33' 19"	2802	94° 58' 54"	2819	93° 24' 51"	2835
18	Aldebaran	W.	112 36 54	2834	114 16 52	2869	115 56 29	2883	117 35 47	2897
	Pollux	W.	69 0 29	2835	70 38 36	2849	72 16 25	2860	73 53 58	2874
	Regulus	W.	32 30 54	2849	34 10 46	2873	35 50 19	2898	37 29 33	2901
	Saturn	E.	59 34 5	2899	57 55 9	2818	56 16 35	2829	54 38 20	2844
	SUN	E.	85 39 52	2916	84 7 54	2931	82 36 15	2947	81 4 56	2963
19	Pollux	W.	81 57 24	2787	83 33 15	2749	85 8 50	2761	86 44 9	2773
	Regulus	W.	45 41 3	2866	47 18 28	2880	48 55 35	2892	50 32 26	2704
	Saturn	E.	46 31 55	2714	44 55 34	2728	43 19 31	2741	41 43 45	2745
	SUN	E.	73 33 5	2836	72 3 37	2850	70 34 26	2865	69 5 33	2878
20	Pollux	W.	94 36 50	2831	96 10 37	2843	97 44 9	2864	99 17 27	2886
	Regulus	W.	58 32 42	2761	60 8 1	2773	61 43 5	2783	63 17 55	2793
	Saturn	E.	33 49 20	2819	32 15 17	2834	30 41 33	2846	29 8 4	2859
	SUN	E.	61 45 10	2143	60 17 52	2155	58 50 49	2168	57 24 1	2179
21	Pollux	W.	107 0 27	2919	108 32 22	2928	110 4 5	2939	111 35 34	2946
	Regulus	W.	71 8 50	2842	72 42 24	2851	74 15 46	2859	75 48 57	2868
	Spica	W.	18 17 41	3040	19 47 4	3022	21 16 50	3007	22 46 54	2997
	SUN	E.	50 13 27	2226	48 48 0	2247	47 22 46	2257	45 57 44	2268
22	Regulus	W.	83 32 14	2907	85 4 24	2918	86 36 24	2921	88 8 16	2928
	Spica	W.	30 19 6	2984	31 49 39	2964	33 20 11	2986	34 50 41	2988
	SUN	E.	38 55 39	2319	37 31 50	2330	36 8 13	2340	34 44 48	2350
23	Regulus	W.	95 45 27	2960	97 16 30	2966	98 47 25	2973	100 18 13	2977
	Spica	W.	42 22 24	3008	43 52 33	3007	45 22 37	3010	46 52 37	3014
	SUN	E.	27 50 45	2407	26 28 36	2421	25 6 43	2434	23 45 5	2450
28	SUN	W.	27 21 29	2630	28 41 20	2628	30 1 17	2626	31 21 19	2615
	Jupiter	E.	30 48 3	2148	29 20 51	2148	27 53 39	2147	26 26 26	2146
	Fomalhaut	E.	36 41 13	4132	35 31 42	4213	34 23 27	4301	33 16 35	4401
	α Pegasi	E.	49 47 48	2610	48 29 24	2634	47 11 26	2660	45 53 56	2690
	α Arietis	E.	91 44 5	2314	90 18 12	2314	88 52 19	2318	87 26 25	2311
	Aldebaran	E.	124 28 40	2077	123 0 2	2077	121 31 24	2076	120 2 44	2074
29	SUN	W.	38 2 52	2490	39 23 27	2486	40 44 7	2480	42 4 53	2475
	α Aquilæ	W.	31 9 25	2786	31 57 8	2836	32 47 27	2832	33 40 11	2830
	α Pegasi	E.	39 35 15	2886	38 21 41	2928	37 9 0	2998	35 57 18	4086
	α Arietis	E.	80 16 37	2307	78 50 36	2308	77 24 33	2304	75 58 28	2302
	Aldebaran	E.	112 38 58	2066	111 10 5	2062	109 41 9	2059	108 12 9	2056
30	SUN	W.	48 50 17	2444	50 11 43	2438	51 33 16	2431	52 54 57	2424
	α Aquilæ	W.	38 34 21	2484	39 38 18	2486	40 43 41	2481	41 50 23	2471
	Venus	W.	25 24 13	2698	26 43 0	2676	28 2 0	2664	29 21 14	2663
	α Arietis	E.	68 47 40	2194	67 21 24	2193	65 55 7	2191	64 28 47	2189
	Aldebaran	E.	100 46 0	2034	99 16 30	2029	97 46 53	2023	96 17 9	2017
31	SUN	W.	59 45 34	2383	61 8 11	2372	62 30 59	2368	63 53 58	2362
	α Aquilæ	W.	47 41 2	2916	48 54 7	2904	50 8 3	2917	51 22 48	2911
	Venus	W.	36 0 34	2496	37 21 4	2482	38 41 48	2471	40 2 44	2459
	α Arietis	E.	57 16 38	2163	55 50 8	2181	54 23 36	2180	52 57 3	2181
	Aldebaran	E.	88 46 27	2061	87 15 51	2073	85 45 5	2066	84 14 8	2066

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Star's Name and Position.	Midnight.	P. L. of Dist.	XV ^a .	P. L. of Dist.	XVIII ^a .	P. L. of Dist.	XXI ^a .	P. L. of Dist.
17	SUN E.	91° 51' 9"	2862	90° 17' 49"	2868	88° 44' 49"	2884	87° 12' 10"	2901
18	Aldebaran W.	119 14 46	2811	120 53 26	2825	122 31 47	2838	124 9 50	2852
	Pollux W.	75 31 13	2887	77 8 11	2899	78 44 52	2712	80 21 16	2724
	Regulus W.	39 8 27	2614	40 47 3	2627	42 25 21	2640	44 3 21	2654
	Saturn E.	53 0 25	2658	51 22 49	2672	49 45 32	2687	48 8 34	2701
	SUN E.	79 33 57	2877	78 3 16	2888	76 32 54	2908	75 2 51	2922
19	Pollux W.	88 19 12	2785	89 53 59	2797	91 28 31	2808	93 2 48	2820
	Regulus W.	52 9 0	2716	53 45 18	2728	55 21 21	2739	56 57 9	2750
	Saturn E.	40 8 18	2768	38 33 8	2780	36 58 14	2794	35 23 38	2808
	SUN E.	67 36 56	2901	66 8 35	2105	64 40 31	2118	63 12 43	2130
20	Pollux W.	100 50 30	2876	102 23 20	2887	103 55 56	2898	105 28 18	2908
	Regulus W.	64 52 32	2804	66 26 55	2813	68 1 6	2823	69 35 4	2832
	Saturn E.	27 34 52	2872	26 1 57	2887	24 29 21	2900	22 57 2	2915
	SUN E.	55 57 27	2191	54 31 7	2202	53 5 0	2214	51 39 7	2225
21	Pollux W.	113 6 50	2980	114 37 53	2989	116 8 44	2990	117 39 22	2991
	Regulus W.	77 21 57	2876	78 54 47	2884	80 27 26	2892	81 59 55	2900
	Spica W.	24 17 10	2991	25 47 34	2987	27 18 3	2985	28 46 34	2985
	SUN E.	44 32 55	2378	43 8 18	2388	41 43 53	2399	40 19 40	2409
22	Regulus W.	89 39 59	2985	91 11 33	2942	92 42 59	2948	94 14 17	2954
	Spica W.	36 21 9	2991	37 51 33	2983	39 21 54	2997	40 52 11	3008
	SUN E.	33 21 34	2361	31 58 33	2372	30 35 44	2383	29 13 8	2394
23	Regulus W.	101 48 54	2983	103 19 28	2986	104 49 56	2993	106 20 18	2998
	Spica W.	48 22 32	2918	49 52 22	2929	51 22 8	2935	52 51 50	2939
	SUN E.	22 23 45	2408	21 2 43	2406	19 42 3	2397	18 21 47	2388
28	SUN W.	32 41 26	2450	34 1 29	2405	35 21 58	2400	36 42 22	2406
	Jupiter E.	24 59 12	2145	23 31 58	2144	22 4 42	2143	20 37 25	2143
	Fomalhaut E.	32 11 15	4515	31 7 36	4545	30 5 50	4593	29 6 8	4602
	α Pegasi E.	44 36 58	2722	43 20 34	2756	42 4 46	2794	40 49 38	2828
	α Arietis E.	86 0 29	2210	84 34 32	2210	83 8 35	2209	81 42 37	2208
	Aldebaran E.	118 34 3	2972	117 5 20	2971	115 36 35	2968	114 7 48	2967
29	SUN W.	43 25 45	2470	44 46 43	2463	46 7 48	2458	47 28 59	2453
	α Aquilæ W.	34 35 10	4990	35 22 13	4847	36 31 11	4717	37 31 56	4600
	α Pegasi E.	34 46 43	4141	33 37 21	4226	32 29 19	4323	31 22 48	4426
	α Arietis E.	74 32 22	2201	73 6 14	2200	71 40 5	2193	70 13 54	2196
	Aldebaran E.	106 43 5	2952	105 13 56	2948	103 44 43	2943	102 15 24	2939
30	SUN W.	54 16 46	2446	55 38 44	2408	57 0 51	2400	58 23 8	2382
	α Aquilæ W.	42 58 20	4158	44 7 26	4089	45 17 38	4077	46 28 51	3998
	Venus W.	30 40 40	2540	32 0 20	2529	33 20 12	2517	34 40 17	2506
	α Arietis E.	63 2 25	2188	61 36 1	2186	60 9 35	2184	58 43 7	2183
	Aldebaran E.	94 47 17	2911	93 17 18	2904	91 47 10	2897	90 16 53	2889
31	SUN W.	65 17 9	2342	66 40 32	2331	68 4 8	2319	69 27 57	2307
	α Aquilæ W.	52 38 20	2730	53 54 35	2691	55 11 32	2651	56 29 11	2616
	Venus W.	41 23 54	2446	42 45 18	2424	44 6 56	2422	45 28 48	2409
	α Arietis E.	51 30 31	2181	50 3 59	2182	48 37 28	2183	47 16 59	2182
	Aldebaran E.	82 42 59	2946	81 11 39	2936	79 40 6	2927	78 8 21	2916

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	16 43 54.49	0.824	17 38 34.7	13.96	21 57.8	1	17 48 0.95	8.630	18 48 28.7	11.63	21 2.7
2	16 44 7.13	0.726	17 33 24.8	11.86	21 54.2	2	17 51 30.44	8.801	18 53 3.3	11.23	21 2.3
3	16 44 29.36	1.123	17 29 5.1	9.82	21 50.8	3	17 55 3.41	8.943	18 57 27.7	10.78	21 2.0
4	16 45 1.01	1.509	17 25 33.6	7.85	21 47.5	4	17 58 39.71	9.079	19 1 40.8	10.28	21 1.7
5	16 45 41.83	1.887	17 22 47.9	5.99	21 44.4	5	18 2 19.22	9.210	19 5 41.1	9.72	21 1.5
6	16 46 31.57	2.253	17 20 46.0	4.20	21 41.4	6	18 6 1.80	9.336	19 9 27.4	9.11	21 1.3
7	16 47 29.98	2.610	17 19 26.3	2.48	21 38.6	7	18 9 47.34	9.457	19 12 58.6	8.46	21 1.2
8	16 48 36.85	2.938	17 18 47.0	+0.84	21 35.9	8	18 13 35.74	9.574	19 16 13.7	7.77	21 1.0
9	16 49 51.94	3.294	17 18 45.8	-0.69	21 33.2	9	18 17 26.88	9.686	19 19 11.6	7.03	21 1.0
10	16 51 15.00	3.622	17 19 20.1	2.12	21 30.9	10	18 21 20.67	9.794	19 21 51.3	6.25	21 1.0
11	16 52 45.79	3.939	17 20 27.5	3.45	21 28.6	11	18 25 17.01	9.896	19 24 11.8	5.43	21 1.0
12	16 54 24.07	4.246	17 22 5.9	4.69	21 26.5	12	18 29 15.78	9.997	19 26 12.2	4.58	21 1.1
13	16 56 9.60	4.543	17 24 12.8	5.83	21 24.4	13	18 33 16.89	10.093	19 27 51.8	3.69	21 1.2
14	16 58 2.15	4.831	17 26 46.1	6.89	21 22.4	14	18 37 20.22	10.183	19 29 9.5	2.76	21 1.3
15	17 0 1.48	5.108	17 29 43.7	7.86	21 20.5	15	18 41 25.69	10.271	19 30 4.5	1.80	21 1.5
16	17 2 7.38	5.378	17 33 3.4	8.73	21 18.7	16	18 45 33.22	10.355	19 30 36.1	-0.82	21 1.7
17	17 4 19.64	5.639	17 36 42.7	9.50	21 17.1	17	18 49 42.72	10.435	19 30 43.8	+0.18	21 1.9
18	17 6 38.07	5.898	17 40 39.6	10.19	21 15.6	18	18 53 54.10	10.512	19 30 26.8	1.23	21 2.2
19	17 9 2.48	6.138	17 44 51.9	10.79	21 14.2	19	18 58 7.28	10.583	19 29 44.5	2.30	21 2.5
20	17 11 32.69	6.375	17 49 17.8	11.31	21 12.8	20	19 2 22.18	10.654	19 28 36.2	3.39	21 2.9
21	17 14 8.50	6.605	17 53 55.0	11.75	21 11.5	21	19 6 38.70	10.720	19 27 1.4	4.51	21 3.2
22	17 16 49.72	6.826	17 58 41.7	12.10	21 10.4	22	19 10 56.76	10.783	19 24 59.6	5.64	21 3.6
23	17 19 36.16	7.039	18 3 35.9	12.37	21 9.3	23	19 15 16.27	10.841	19 22 30.5	6.79	21 4.0
24	17 22 27.63	7.246	18 8 35.8	12.57	21 8.3	24	19 19 37.14	10.896	19 19 33.5	7.96	21 4.4
25	17 25 23.99	7.446	18 13 39.3	12.69	21 7.3	25	19 23 59.29	10.948	19 16 8.3	9.15	21 4.8
26	17 28 25.05	7.638	18 18 44.9	12.71	21 6.5	26	19 28 22.64	10.996	19 12 14.4	10.35	21 5.3
27	17 31 30.63	7.823	18 23 50.8	12.69	21 5.7	27	19 32 47.10	11.041	19 7 51.6	11.53	21 5.8
28	17 34 40.58	8.002	18 28 55.2	12.62	21 5.0	28	19 37 12.61	11.083	19 2 59.9	12.77	21 6.3
29	17 37 54.73	8.174	18 33 56.9	12.48	21 4.3	29	19 41 39.08	11.121	18 57 38.8	13.99	21 6.8
30	17 41 12.94	8.340	18 38 54.2	12.26	21 3.7	30	19 46 6.43	11.156	18 51 48.1	15.23	21 7.3
31	17 44 35.06	8.500	18 43 45.2	11.97	21 3.2	31	19 50 34.57	11.187	18 45 27.7	16.47	21 7.9
32	17 48 0.95	8.650	18 48 28.7	11.63	21 2.7	32	19 55 3.42	11.215	18 38 37.4	17.71	21 8.5
Day of Month, 1st. 6th. 11th. 16th. 21st. 26th. 31st.						Day of the Month, 5th. 10th. 15th. 20th. 25th.					
Semidiam. 26.4 24.3 22.4 20.6 19.0 17.6 16.3						Semidiameter 15.2 14.3 13.4 12.6 12.0					
Hor. Par. 26.6 24.5 22.5 20.7 19.1 17.7 16.5						Horizontal Parallax 15.4 14.4 13.5 12.7 12.0					

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
1	19 41 39.08	11-131	18 57 38.8	13-99	21 6.8
2	19 46 6.43	11-136	18 51 48.1	15-23	21 7.3
3	19 50 34.57	11-187	18 45 27.7	16-47	21 7.9
4	19 55 3.42	11-215	18 38 37.4	17-71	21 8.5
5	19 59 32.92	11-241	18 31 17.4	18-96	21 9.1
6	20 4 3.01	11-265	18 23 27.3	20-20	21 9.8
7	20 8 33.62	11-284	18 15 7.2	21-46	21 10.4
8	20 13 4.63	11-302	18 6 17.2	22-70	21 11.1
9	20 17 36.13	11-317	17 56 57.4	23-95	21 11.7
10	20 22 7.91	11-330	17 47 7.7	25-22	21 12.3
11	20 26 30.97	11-340	17 36 48.2	26-48	21 12.9
12	20 31 12.26	11-349	17 25 59.1	27-66	21 13.5
13	20 35 44.73	11-355	17 14 40.5	28-89	21 14.1
14	20 40 17.33	11-360	17 2 52.5	30-10	21 14.7
15	20 44 50.03	11-363	16 50 35.4	31-31	21 15.3
16	20 49 22.77	11-364	16 37 49.4	32-51	21 15.9
17	20 53 55.52	11-334	16 24 34.8	33-70	21 16.5
18	20 58 23.26	11-338	16 10 51.7	34-89	21 17.1
19	21 3 0.94	11-339	15 56 40.4	35-03	21 17.7
20	21 7 33.53	11-335	15 42 1.3	37-21	21 18.3
21	21 12 6.01	11-331	15 26 54.5	38-35	21 18.9
22	21 16 38.36	11-314	15 11 20.5	39-47	21 19.5
23	21 21 10.53	11-336	14 55 19.8	40-58	21 20.1
24	21 25 42.50	11-337	14 38 52.7	41-67	21 20.7
25	21 30 14.24	11-317	14 21 59.5	42-75	21 21.2
26	21 34 45.74	11-307	14 4 40.6	43-81	21 21.8
27	21 39 16.96	11-295	13 46 56.5	44-93	21 22.3
28	21 43 47.88	11-282	13 28 47.9	45-96	21 22.8
29	21 48 18.48	11-269	13 10 15.2	46-86	21 23.2
30	21 52 48.77	11-255	12 51 18.0	47-83	21 23.7
31	21 57 17.71	11-240	12 31 59.3	48-79	21 24.2
32	22 1 48.29	11-225	-12 12 16.9	49-73	21 24.8

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
1	22 1 48.29	11-225	-12 12 16.9	49-73	21 24.8
2	22 6 17.49	11-209	11 52 12.3	50-64	21 25.3
3	22 10 46.33	11-192	11 31 46.1	51-53	21 25.9
4	22 15 14.79	11-176	11 10 58.9	52-39	21 26.4
5	22 19 42.84	11-160	10 49 51.2	53-23	21 26.9
6	22 24 10.48	11-143	10 28 23.7	54-06	21 27.4
7	22 28 37.73	11-125	10 6 36.8	54-88	21 27.9
8	22 33 4.58	11-110	9 44 31.0	55-62	21 28.4
9	22 37 31.05	11-095	9 22 7.0	56-37	21 28.9
10	22 41 57.14	11-079	8 59 25.4	57-09	21 29.3
11	22 46 22.86	11-064	8 36 26.7	57-79	21 29.8
12	22 50 48.22	11-049	8 13 11.4	58-47	21 30.3
13	22 55 13.22	11-034	7 49 40.2	59-11	21 30.8
14	22 59 37.88	11-020	7 25 53.9	59-72	21 31.2
15	23 4 2.22	11-008	7 1 53.0	60-33	21 31.7
16	23 8 26.26	10-996	6 37 37.8	60-92	21 32.2
17	23 12 50.03	10-985	6 13 9.0	61-47	21 32.6
18	23 17 13.54	10-974	5 48 27.3	61-99	21 33.0
19	23 21 36.80	10-964	5 23 33.4	62-49	21 33.5
20	23 25 59.84	10-956	4 58 27.7	62-97	21 33.9
21	23 30 22.68	10-948	4 33 10.8	63-43	21 34.4
22	23 34 45.36	10-942	4 7 43.4	63-88	21 34.8
23	23 39 7.90	10-936	3 42 6.2	64-24	21 35.2
24	23 43 30.30	10-931	3 16 19.9	64-61	21 35.6
25	23 47 52.61	10-927	2 50 25.0	64-96	21 36.1
26	23 52 14.83	10-924	2 24 22.0	65-27	21 36.5
27	23 56 37.00	10-922	1 58 11.7	65-57	21 37.0
28	0 0 59.13	10-921	1 31 54.8	66-83	21 37.4
29	0 5 21.24	10-921	1 5 32.0	66-06	21 37.8
30	0 9 43.38	10-921	0 39 3.9	66-27	21 38.2
31	0 14 5.54	10-924	-0 12 31.1	66-45	21 38.7
32	0 18 27.76	10-928	+ 0 14 5.8	66-61	21 39.1

Day of the Month,	3d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	11.3	10.8	10.3	9.8	9.4	9.1
Hor. Parallax	11.4	10.9	10.4	9.9	9.5	9.1

Day of the Month,	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	8.7	8.4	8.1	7.8	7.5	7.4
Hor. Parallax	8.8	8.5	8.2	7.9	7.6	7.4

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
1	h m s 0 14 5.54	10-934	0 12 31.1	66-45	21 38.7	1	h m s 2 32 35.08	11-616	+13 9 12.7	58-38	21 55.2
2	0 18 27.76	10-928	+ 0 14 5.8	66-61	21 39.1	2	2 37 14.35	11-636	13 32 25.5	57-66	21 56.0
3	0 22 50.10	10-933	0 40 46.0	66-73	21 39.6	3	2 41 54.59	11-697	13 55 20.6	56-91	21 56.7
4	0 27 12.55	10-938	1 7 28.9	66-83	21 40.0	4	2 46 35.82	11-739	14 17 57.4	56-14	21 57.5
5	0 31 35.14	10-946	1 34 13.9	66-90	21 40.5	5	2 51 18.07	11-782	14 40 15.3	55-33	21 58.3
6	0 35 57.90	10-958	2 1 0.3	66-95	21 40.9	6	2 56 1.34	11-823	15 2 13.5	54-49	21 59.1
7	0 40 20.87	10-962	2 27 47.3	66-96	21 41.3	7	3 0 45.66	11-869	15 23 51.2	53-62	21 59.9
8	0 44 44.08	10-973	2 54 34.4	66-95	21 41.7	8	3 5 31.04	11-913	15 45 8.0	52-74	22 0.7
9	0 49 7.55	10-984	3 21 21.2	66-93	21 42.2	9	3 10 17.48	11-967	16 6 3.1	51-82	22 1.5
10	0 53 31.31	10-997	3 48 6.9	66-88	21 42.6	10	3 15 5.01	12-003	16 26 35.6	50-87	22 2.4
11	0 57 55.39	11-011	4 14 50.7	66-75	21 43.1	11	3 19 53.63	12-049	16 46 44.9	49-90	22 3.3
12	1 2 19.82	11-027	4 41 31.3	66-63	21 43.6	12	3 24 43.35	12-095	17 6 30.4	48-98	22 4.3
13	1 6 44.67	11-044	5 8 8.7	66-48	21 44.1	13	3 29 34.17	12-141	17 25 51.5	47-85	22 5.1
14	1 11 9.95	11-068	5 34 42.4	66-31	21 44.6	14	3 34 26.11	12-187	17 44 47.4	46-79	22 6.1
15	1 15 35.70	11-083	6 1 11.7	66-11	21 45.1	15	3 39 19.18	12-234	18 3 17.3	45-69	22 7.0
16	1 20 1.93	11-104	6 27 36.0	65-89	21 45.6	16	3 44 13.37	12-282	18 21 20.6	44-57	22 8.0
17	1 24 28.70	11-127	6 53 54.3	65-63	21 46.1	17	3 49 8.70	12-328	18 38 56.9	43-43	22 9.0
18	1 28 56.03	11-149	7 20 6.1	65-35	21 46.6	18	3 54 5.13	12-374	18 56 5.3	42-25	22 10.0
19	1 33 23.96	11-176	7 46 10.9	65-04	21 47.1	19	3 59 2.66	12-421	19 12 45.2	41-06	22 11.0
20	1 37 52.51	11-208	8 12 7.9	64-70	21 47.6	20	4 4 1.33	12-468	19 28 55.9	39-82	22 12.1
21	1 42 21.74	11-233	8 37 56.4	64-33	21 48.2	21	4 9 1.10	12-513	19 44 36.9	38-57	22 13.2
22	1 46 51.66	11-261	9 3 35.7	63-93	21 48.8	22	4 14 1.98	12-559	19 59 47.5	37-29	22 14.3
23	1 51 22.30	11-283	9 29 5.1	63-50	21 49.4	23	4 19 3.93	12-603	20 14 27.1	35-99	22 15.4
24	1 55 53.67	11-324	9 54 23.9	63-05	21 50.0	24	4 24 6.95	12-647	20 28 35.1	34-66	22 16.5
25	2 0 25.85	11-357	10 19 31.5	62-57	21 50.6	25	4 29 11.00	12-689	20 42 10.8	33-31	22 17.6
26	2 4 58.83	11-391	10 44 27.3	62-06	21 51.2	26	4 34 16.06	12-732	20 55 13.8	31-83	22 18.8
27	2 9 32.65	11-427	11 9 10.6	61-53	21 51.8	27	4 39 22.13	12-773	21 7 43.5	30-53	22 19.9
28	2 14 7.34	11-464	11 33 40.6	60-95	21 52.4	28	4 44 29.16	12-812	21 19 39.1	29-09	22 21.1
29	2 18 42.91	11-501	11 57 56.4	60-35	21 53.1	29	4 49 37.12	12-851	21 31 0.2	27-65	22 22.3
30	2 23 19.37	11-538	12 21 57.4	59-72	21 53.8	30	4 54 46.00	12-888	21 41 46.4	26-19	22 23.6
31	2 27 56.76	11-577	12 45 43.1	59-07	21 54.5	31	4 59 55.75	12-923	21 51 57.2	24-70	22 24.8
32	2 32 35.08	11-616	+13 9 12.7	58-38	21 55.2	32	5 5 6.34	12-958	+22 1 32.0	23-19	22 26.1
Day of Month, 1st. 6th. 11th. 16th. 21st. 26th. 31st.						Day of the Month, 5th. 10th. 15th. 20th. 25th. 30th.					
Semidiam. 7.2 7.0 6.8 6.6 6.5 6.3 6.2						Semidiameter 6.1 5.9 5.8 5.7 5.6 5.6					
Hor. Par. 7.2 7.0 6.8 6.7 6.5 6.4 6.2						Hor. Parallax 6.1 6.0 5.9 5.8 5.7 5.6					

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	4 59 55.75	13.922	+21 51 57.2	24.70	22 24.8	1	7 43 8.45	13.060	+21 46 46.4	26.03	23 5.9
2	5 5 6.34	13.926	22 1 32.0	23.19	22 26.1	2	7 48 21.79	13.041	21 36 2.5	27.02	23 7.2
3	5 10 17.73	13.930	22 10 30.3	21.66	22 27.3	3	7 53 34.43	13.011	21 24 40.7	29.19	23 8.4
4	5 15 29.88	13.931	22 18 51.8	20.12	22 28.6	4	7 58 46.33	13.980	21 12 41.4	30.74	23 9.6
5	5 20 42.75	13.930	22 26 36.1	18.56	22 29.9	5	8 3 57.48	13.948	21 0 5.1	32.27	23 10.0
6	5 25 56.28	13.977	22 33 42.8	16.98	22 31.2	6	8 9 7.85	13.914	20 46 52.2	33.79	23 12.1
7	5 31 10.45	13.100	22 40 11.4	15.39	22 32.5	7	8 14 17.38	13.879	20 33 3.1	35.32	23 13.3
8	5 36 25.21	13.130	22 46 1.6	13.78	22 33.8	8	8 19 26.04	13.843	20 18 38.4	36.76	23 14.5
9	5 41 40.51	13.148	22 51 13.1	12.16	22 35.1	9	8 24 33.82	13.805	20 3 38.4	38.22	23 15.7
10	5 46 56.31	13.160	22 55 45.4	10.53	22 36.4	10	8 29 40.69	13.767	19 48 3.7	39.66	23 16.8
11	5 52 12.55	13.185	23 59 38.4	8.88	22 37.7	11	8 34 46.64	13.729	19 31 54.9	41.07	23 18.0
12	5 57 29.21	13.202	23 2 51.8	7.23	22 39.1	12	8 39 51.65	13.689	19 15 12.4	42.46	23 19.1
13	6 2 46.23	13.215	23 5 25.5	5.47	22 40.4	13	8 44 55.69	13.648	18 57 56.8	43.83	23 20.2
14	6 8 3.55	13.226	23 7 19.3	3.90	22 41.8	14	8 49 58.74	13.607	18 40 8.6	45.17	23 21.3
15	6 13 21.09	13.233	23 8 32.9	2.23	22 43.1	15	8 55 0.82	13.565	18 21 48.6	46.48	23 22.4
16	6 18 38.85	13.243	23 9 6.4	+0.66	22 44.5	16	9 0 1.89	13.523	18 2 57.3	47.78	23 23.5
17	6 23 56.76	13.248	23 8 59.7	-1.12	22 45.8	17	9 5 1.96	13.481	17 43 35.1	49.06	23 24.5
18	6 29 14.78	13.252	23 8 12.4	3.83	22 47.2	18	9 10 1.02	13.440	17 23 42.8	50.29	23 25.5
19	6 34 32.84	13.253	23 6 44.4	4.61	22 48.5	19	9 14 59.09	13.399	17 3 21.0	51.51	23 26.5
20	6 39 50.90	13.251	23 4 35.9	6.19	22 49.9	20	9 19 56.15	13.357	16 42 30.3	52.70	23 27.5
21	6 45 8.91	13.248	23 1 47.1	7.88	22 51.2	21	9 24 52.21	13.314	16 21 11.4	53.86	23 28.5
22	6 50 26.80	13.243	22 58 17.7	9.37	22 52.6	22	9 29 47.24	13.273	15 59 24.9	54.99	23 29.4
23	6 55 44.53	13.235	22 54 7.9	11.23	22 53.9	23	9 34 41.29	13.231	15 37 11.6	56.10	23 30.4
24	7 1 2.06	13.226	22 49 17.7	13.08	22 55.3	24	9 39 34.35	13.190	15 14 32.1	57.18	23 31.3
25	7 6 19.32	13.213	22 43 47.4	14.89	22 56.6	25	9 44 26.43	13.149	14 51 27.0	58.23	23 32.2
26	7 11 36.26	13.198	22 37 37.1	16.35	22 58.0	26	9 49 17.52	13.109	14 27 57.1	59.25	23 33.1
27	7 16 52.82	13.182	22 30 47.1	17.91	22 59.3	27	9 54 7.66	13.069	14 4 3.1	60.24	23 34.0
28	7 22 8.98	13.163	22 23 17.2	19.67	23 0.6	28	9 58 56.85	13.029	13 39 45.6	61.20	23 34.9
29	7 27 24.67	13.143	22 15 7.9	21.30	23 1.9	29	10 3 45.08	13.980	13 15 5.4	62.13	23 35.7
30	7 32 39.85	13.121	22 6 19.4	22.63	23 3.3	30	10 8 32.39	13.942	12 50 3.3	63.03	23 36.5
31	7 37 54.46	13.096	21 56 52.1	24.43	23 4.6	31	10 13 18.80	13.915	12 24 39.8	63.91	23 37.4
32	7 43 8.45	13.069	+21 46 46.4	26.03	23 5.9	32	10 18 4.32	13.878	+11 58 55.7	64.78	23 38.2
Day of the Month, 5th. 10th. 15th. 20th. 25th. 30th.						Day of the Month, 4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter	5.5	5.4	5.3	5.3	5.2	Semidiameter	5.1	5.1	5.1	5.0	5.0
Hor. Parallax	5.5	5.4	5.4	5.3	5.3	Hor. Parallax	5.2	5.1	5.1	5.1	5.0

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	10 18 4.32	11-878	+11 58 55.7	64-75	23 38.2	1	12 36 28.17	11-422	- 2 32 35.2	78-98	23 58.0
2	10 22 48.98	11-813	11 32 51.7	65-56	23 39.0	2	12 41 2.40	11-432	3 2 56.6	78-83	23 58.7
3	10 27 32.78	11-808	11 6 23.7	66-34	23 39.8	3	12 45 36.91	11-444	3 33 15.1	78-70	23 59.4
4	10 32 15.77	11-775	10 39 47.5	67-09	23 40.5	4	12 50 11.73	11-457	4 3 30.0	78-53	
5	10 36 57.97	11-743	10 12 48.4	67-52	23 41.3	5	12 54 46.87	11-472	4 33 40.5	78-33	0 0.1
6	10 41 39.39	11-710	9 45 32.3	68-51	23 42.0	6	12 59 22.40	11-489	5 3 45.8	78-09	0 0.7
7	10 46 20.07	11-680	9 18 0.1	69-16	23 42.7	7	13 3 58.35	11-507	5 33 45.0	74-83	0 1.3
8	10 51 0.04	11-651	8 50 12.4	69-79	23 43.4	8	13 8 34.76	11-527	6 3 37.7	74-54	0 2.0
9	10 55 39.33	11-623	8 22 9.9	70-39	23 44.1	9	13 13 11.66	11-549	6 33 23.1	74-23	0 2.6
10	11 0 17.93	11-598	7 53 53.3	70-97	23 44.8	10	13 17 49.13	11-573	7 3 0.2	73-88	0 3.3
11	11 4 56.04	11-573	7 25 23.4	71-51	23 45.5	11	13 22 27.18	11-608	7 32 28.2	73-46	0 4.0
12	11 9 33.51	11-550	6 56 40.9	72-02	23 46.1	12	13 27 5.86	11-626	8 1 46.3	73-04	0 4.7
13	11 14 10.44	11-528	6 27 46.6	73-50	23 46.8	13	13 31 45.21	11-654	8 30 54.1	73-39	0 5.4
14	11 18 46.87	11-508	5 58 41.1	73-95	23 47.5	14	13 36 25.26	11-684	8 59 50.7	73-11	0 6.2
15	11 23 22.84	11-490	5 29 25.2	73-37	23 48.1	15	13 41 6.07	11-717	9 28 35.2	71-59	0 7.0
16	11 27 58.40	11-478	4 59 59.5	73-76	23 48.8	16	13 45 47.66	11-751	9 57 7.0	71-04	0 7.7
17	11 32 33.57	11-458	4 30 24.8	74-12	23 49.5	17	13 50 30.10	11-786	10 25 25.1	70-45	0 8.5
18	11 37 8.41	11-445	4 0 41.8	74-45	23 50.1	18	13 55 13.38	11-822	10 53 28.8	69-84	0 9.2
19	11 41 42.92	11-433	3 30 51.3	74-74	23 50.8	19	13 59 57.56	11-860	11 21 17.4	69-19	0 10.0
20	11 46 17.18	11-423	3 0 53.9	75-01	23 51.4	20	14 4 42.67	11-899	11 48 50.1	68-51	0 10.8
21	11 50 51.23	11-414	2 30 50.6	75-25	23 52.0	21	14 9 28.74	11-941	12 16 6.0	67-79	0 11.6
22	11 55 25.04	11-407	2 0 41.3	75-46	23 52.6	22	14 14 15.82	11-983	12 43 4.3	67-06	0 12.5
23	11 59 53.75	11-403	1 30 23.6	75-63	23 53.2	23	14 19 3.92	12-026	13 9 44.2	66-27	0 13.3
24	12 4 32.36	11-399	1 0 11.4	75-78	23 53.8	24	14 23 53.06	12-069	13 36 5.1	65-46	0 14.2
25	12 9 5.91	11-397	+ 0 23 51.0	75-90	23 54.4	25	14 28 43.27	12-115	14 2 6.1	64-61	0 15.1
26	12 13 39.45	11-398	- 0 0 31.9	75-99	23 55.0	26	14 33 34.59	12-161	14 27 46.3	63-73	0 16.0
27	12 18 13.01	11-399	0 30 56.4	76-03	23 55.6	27	14 38 27.02	12-209	14 53 4.8	63-81	0 16.9
28	12 22 46.61	11-403	1 1 21.6	76-03	23 56.2	28	14 43 20.61	12-257	15 18 1.0	61-86	0 17.9
29	12 27 20.31	11-407	1 31 46.9	76-04	23 56.8	29	14 48 15.35	12-305	15 42 33.9	60-87	0 18.9
30	12 31 54.15	11-414	2 2 11.7	76-01	23 57.4	30	14 53 11.28	12-355	16 6 42.9	59-84	0 19.9
31	12 36 23.17	11-422	2 32 35.2	75-93	23 58.0	31	14 58 8.38	12-404	16 30 27.1	58-81	0 20.9
32	12 41 2.40	11-432	- 3 2 56.6	75-88	23 58.7	32	15 3 6.68	12-454	-16 53 45.6	57-73	0 21.9
Day of the Month, 3d. 8th. 13th. 18th. 23d. 28th.						Day of the Month, 3d. 8th. 13th. 18th. 23th. 28th.					
Semidiameter 5.0 5.0 5.0 5.0 4.9 4.9						Semidiameter 5.0 5.0 5.0 5.0 5.0 5.0					
Hor. Parallax 5.0 5.0 5.0 5.0 5.0 5.0						Hor. Parallax 5.0 5.0 5.0 5.0 5.0 5.1					

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	15 3 6.65	12.484	16 53 45.6	57.79	0 21.9
2	15 8 6.19	12.505	17 16 37.6	56.80	0 22.9
3	15 13 6.92	12.536	17 39 2.5	55.45	0 24.0
4	15 18 8.87	12.607	18 0 59.2	54.26	0 25.1
5	15 23 12.06	12.699	18 22 27.2	53.03	0 26.2
6	15 28 16.48	12.709	18 43 25.6	51.80	0 27.3
7	15 33 22.13	12.761	19 3 53.6	50.52	0 28.5
8	15 38 29.01	12.812	19 23 50.5	49.21	0 29.7
9	15 43 37.12	12.863	19 43 15.5	47.86	0 30.9
10	15 48 46.45	12.914	20 2 7.7	46.48	0 32.1
11	15 53 56.99	12.964	20 20 26.5	45.07	0 33.4
12	15 59 8.73	13.014	20 38 11.3	43.64	0 34.6
13	16 4 21.66	13.063	20 55 21.4	42.18	0 35.9
14	16 9 35.78	13.112	21 11 55.9	40.69	0 37.2
15	16 14 51.04	13.159	21 27 54.2	39.16	0 38.5
16	16 20 7.43	13.206	21 43 15.6	37.61	0 39.8
17	16 25 24.92	13.251	21 57 59.5	36.03	0 41.2
18	16 30 43.49	13.296	22 12 5.3	34.45	0 42.5
19	16 36 3.12	13.339	22 25 32.6	32.82	0 43.9
20	16 41 23.76	13.380	22 38 20.6	31.16	0 45.3
21	16 46 45.37	13.419	22 50 28.5	29.49	0 46.7
22	16 52 7.90	13.456	23 1 55.8	27.78	0 48.1
23	16 57 31.34	13.494	23 12 42.0	26.07	0 49.6
24	17 2 55.69	13.527	23 22 47.0	24.33	0 51.1
25	17 8 20.66	13.559	23 32 10.1	22.58	0 52.6
26	17 13 46.46	13.589	23 40 50.7	20.80	0 54.1
27	17 19 12.94	13.616	23 48 48.5	19.01	0 55.6
28	17 24 40.04	13.641	23 56 3.3	17.21	0 57.1
29	17 30 7.70	13.663	24 2 34.4	15.37	0 58.6
30	17 35 35.86	13.683	24 8 21.4	13.54	1 0.1
31	17 41 4.46	13.699	24 13 24.2	11.69	1 1.6
32	17 46 33.43	13.713	24 17 42.6	9.84	1 3.1

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	17 41 4.46	13.699	24 13 24.2	11.69	1 1.6
2	17 46 33.43	13.713	24 17 42.6	9.84	1 3.1
3	17 52 2.70	13.724	24 21 16.4	7.97	1 4.7
4	17 57 32.20	13.733	24 24 5.3	6.10	1 6.2
5	18 3 1.90	13.739	24 26 9.3	4.23	1 7.8
6	18 8 31.71	13.743	24 27 28.2	2.34	1 9.3
7	18 14 1.55	13.743	24 28 1.7	-0.45	1 10.9
8	18 19 31.36	13.740	24 27 49.9	+1.43	1 12.4
9	18 25 1.07	13.734	24 26 52.8	3.32	1 14.0
10	18 30 30.62	13.727	24 25 10.4	5.20	1 15.6
11	18 35 59.95	13.716	24 22 43.0	7.08	1 17.2
12	18 41 28.99	13.702	24 19 30.5	8.96	1 18.7
13	18 46 57.67	13.685	24 15 33.0	10.83	1 20.2
14	18 52 25.93	13.668	24 10 50.7	12.69	1 21.7
15	18 57 53.71	13.648	24 5 23.7	14.55	1 23.3
16	19 3 20.95	13.623	23 59 12.2	16.39	1 24.8
17	19 8 47.59	13.596	23 52 16.8	18.22	1 26.3
18	19 14 13.56	13.568	23 44 37.7	20.04	1 27.8
19	19 19 38.84	13.537	23 36 15.0	21.85	1 29.3
20	19 25 3.33	13.504	23 27 9.1	23.63	1 30.7
21	19 30 27.02	13.469	23 17 20.5	25.41	1 32.2
22	19 35 49.83	13.431	23 6 49.5	27.16	1 33.6
23	19 41 11.71	13.391	22 55 36.8	28.89	1 35.1
24	19 46 32.60	13.349	22 43 42.8	30.60	1 36.5
25	19 51 52.47	13.306	22 31 7.8	32.29	1 37.9
26	19 57 11.28	13.261	22 17 52.5	33.97	1 39.2
27	20 2 28.99	13.214	22 3 57.3	35.61	1 40.6
28	20 7 45.54	13.164	21 49 23.0	37.23	1 41.9
29	20 13 0.90	13.115	21 34 10.2	38.82	1 43.2
30	20 18 15.05	13.063	21 18 19.4	40.39	1 44.5
31	20 23 27.95	13.011	21 1 51.4	41.92	1 45.8
32	20 28 39.57	12.957	20 44 46.7	43.45	1 47.1

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	5.1	5.1	5.1	5.2	5.2	5.2
Hor. Parallax	5.1	5.1	5.2	5.2	5.2	5.3

Day of the Month,	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	5.3	5.3	5.4	5.5	5.5	5.6
Hor. Parallax	5.3	5.4	5.4	5.5	5.6	5.6

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	7 46 34.61	4.008	+25 11 22.7	14.52	13 0.9	1	6 58 40.30	2.520	+26 51 59.9	0.73	10 11.7
2	7 44 57.71	4.078	25 17 8.5	14.30	12 55.3	2	6 57 41.29	2.388	26 52 12.8	0.34	10 6.8
3	7 43 19.09	4.146	25 22 49.1	14.08	12 49.7	3	6 56 45.71	2.242	26 52 16.3	0.04	10 2.0
4	7 41 38.93	4.205	25 28 23.9	13.80	12 44.1	4	6 55 53.63	2.095	26 52 10.9	0.41	9 57.2
5	7 39 57.42	4.258	25 33 51.9	13.50	12 38.5	5	6 55 5.08	1.947	26 51 56.9	0.76	9 52.5
6	7 38 14.79	4.298	25 39 12.1	13.17	12 32.9	6	6 54 20.10	1.798	26 51 34.6	1.10	9 47.8
7	7 36 31.30	4.326	25 44 24.0	12.81	12 27.3	7	6 53 38.70	1.649	26 51 4.5	1.42	9 43.2
8	7 34 47.14	4.348	25 49 26.9	12.42	12 21.7	8	6 53 0.90	1.499	26 50 26.8	1.73	9 38.7
9	7 33 2.55	4.351	25 54 20.1	12.01	12 16.1	9	6 52 26.69	1.349	26 49 42.0	2.01	9 34.2
10	7 31 17.76	4.353	25 59 3.0	11.58	12 10.4	10	6 51 56.09	1.198	26 48 50.4	2.26	9 29.8
11	7 29 33.00	4.350	26 3 34.9	11.09	12 4.8	11	6 51 29.08	1.048	26 47 52.4	2.54	9 25.4
12	7 27 48.47	4.346	26 7 55.4	10.61	11 59.1	12	6 51 5.65	0.901	26 46 48.4	2.79	9 21.1
13	7 26 4.39	4.323	26 12 4.2	10.11	11 53.5	13	6 50 45.78	0.754	26 45 38.6	3.03	9 16.8
14	7 24 23.99	4.290	26 16 1.1	9.61	11 47.8	14	6 50 29.43	0.609	26 44 23.2	3.25	9 12.6
15	7 22 38.49	4.247	26 19 45.8	9.10	11 42.2	15	6 50 16.55	0.466	26 43 2.4	3.46	9 8.5
16	7 20 57.10	4.197	26 23 18.1	8.58	11 36.6	16	6 50 7.10	0.328	26 41 36.5	3.67	9 4.5
17	7 19 17.01	4.139	26 26 37.7	8.05	11 31.0	17	6 50 1.05	0.182	26 40 5.7	3.88	9 0.5
18	7 17 38.38	4.074	26 29 44.7	7.52	11 25.4	18	6 49 58.36	0.043	26 38 30.2	4.07	8 56.6
19	7 16 1.41	4.002	26 32 38.9	6.99	11 19.9	19	6 49 58.98	0.094	26 36 50.1	4.28	8 52.7
20	7 14 26.27	3.928	26 35 20.5	6.46	11 14.4	20	6 50 2.84	0.229	26 35 5.6	4.49	8 48.9
21	7 12 53.13	3.838	26 37 49.3	5.94	11 8.9	21	6 50 9.92	0.362	26 33 17.0	4.68	8 45.1
22	7 11 22.15	3.744	26 40 5.5	5.42	11 3.5	22	6 50 29.16	0.492	26 31 24.3	4.77	8 41.4
23	7 9 53.47	3.544	26 42 9.2	4.91	10 58.1	23	6 50 33.51	0.621	26 29 27.6	4.94	8 37.7
24	7 8 27.24	3.339	26 44 0.7	4.40	10 52.7	24	6 50 49.92	0.747	26 27 26.9	5.11	8 34.1
25	7 7 3.60	3.428	26 45 40.1	3.89	10 47.4	25	6 51 9.33	0.871	26 25 22.3	5.27	8 30.5
26	7 5 42.68	3.312	26 47 7.7	3.40	10 42.1	26	6 51 31.71	0.983	26 23 13.8	5.43	8 27.0
27	7 4 24.59	3.191	26 48 23.7	2.93	10 36.9	27	6 51 57.00	1.114	26 21 1.6	5.59	8 23.5
28	7 3 9.45	3.036	26 49 28.3	2.46	10 31.7	28	6 52 25.15	1.233	26 18 45.7	5.75	8 20.0
29	7 1 57.36	2.938	26 50 21.8	2.00	10 26.6	29	6 52 56.10	1.348	26 16 26.2	5.90	8 16.6
30	7 0 48.42	2.804	26 51 4.7	1.58	10 21.6	30	6 53 29.89	1.463	26 14 2.9	6.04	8 13.2
31	6 59 42.70	2.669	26 51 37.3	1.14	10 16.6	31	6 54 6.24	1.576	26 11 35.9	6.19	8 9.9
32	6 58 40.30	2.530	+26 51 59.9	0.73	10 11.7	32	6 54 45.38	1.684	+26 9 5.3	6.30	8 6.6
Day of the Month,						Day of the Month,					
1st.						22.					
9th.						10th.					
17th.						28th.					
25th.						26th.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
7.9						7.2					
7.9						6.7					
7.8						6.2					
7.6						5.8					
13.4						12.2					
13.5						11.4					
13.3						10.6					
12.8						9.8					

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	6 52 56.10	1.348	+26 16 26.2	5.90	8 16.6	1	7 27 21.21	3.875	+24 31 38.6	11.41	6 49.1
2	6 53 23.82	1.468	26 14 2.9	6.04	8 13.2	2	7 28 54.84	3.928	24 27 2.1	11.63	6 46.7
3	6 54 6.24	1.575	26 11 35.9	6.19	8 9.9	3	7 30 29.72	3.980	24 22 20.1	11.86	6 44.4
4	6 54 45.33	1.684	26 9 5.3	6.34	8 6.6	4	7 32 5.82	4.030	24 17 32.6	12.10	6 42.1
5	6 55 27.02	1.791	26 6 31.2	6.50	8 3.3	5	7 33 43.11	4.079	24 12 39.4	12.33	6 39.8
6	6 56 11.26	1.896	26 3 53.4	6.65	8 0.1	6	7 35 21.55	4.126	24 7 40.7	12.57	6 37.5
7	6 56 58.00	1.999	26 1 11.9	6.81	7 56.9	7	7 37 1.11	4.172	24 2 36.3	13.81	6 35.2
8	6 57 47.19	2.099	25 58 26.6	6.96	7 53.8	8	7 38 41.76	4.216	23 57 26.2	13.65	6 33.0
9	6 58 38.77	2.196	25 55 37.6	7.12	7 50.7	9	7 40 23.46	4.260	23 52 10.3	13.29	6 30.8
10	6 59 32.68	2.294	25 52 44.8	7.28	7 47.7	10	7 42 6.17	4.301	23 46 48.6	13.43	6 28.6
11	7 0 28.87	2.388	25 49 48.2	7.44	7 44.7	11	7 43 49.88	4.341	23 41 21.1	13.77	6 26.4
12	7 1 27.28	2.480	25 46 47.8	7.60	7 41.8	12	7 45 34.54	4.380	23 35 47.7	14.02	6 24.2
13	7 2 27.85	2.569	25 43 43.6	7.76	7 38.9	13	7 47 20.12	4.418	23 30 8.2	14.27	6 22.0
14	7 3 30.52	2.655	25 40 35.4	7.92	7 36.1	14	7 49 6.58	4.454	23 24 22.7	14.62	6 19.9
15	7 4 35.24	2.739	25 37 23.3	8.09	7 33.3	15	7 50 53.92	4.489	23 18 31.2	14.77	6 17.7
16	7 5 41.96	2.821	25 34 7.2	8.26	7 30.5	16	7 52 42.10	4.523	23 12 33.5	15.03	6 15.6
17	7 6 50.62	2.900	25 30 47.0	8.43	7 27.7	17	7 54 31.07	4.557	23 6 29.7	15.29	6 13.5
18	7 8 1.17	2.978	25 27 22.6	8.60	7 25.0	18	7 56 20.80	4.589	23 0 19.7	15.55	6 11.4
19	7 9 13.55	3.053	25 23 54.0	8.78	7 22.3	19	7 58 11.28	4.620	22 54 3.6	15.81	6 9.3
20	7 10 27.71	3.127	25 20 21.0	8.96	7 19.6	20	8 0 2.51	4.650	22 47 41.1	16.07	6 7.2
21	7 11 43.63	3.198	25 16 43.7	9.15	7 16.9	21	8 1 54.45	4.679	22 41 12.2	16.33	6 5.1
22	7 13 1.19	3.268	25 13 1.9	9.34	7 14.3	22	8 3 47.07	4.707	22 34 37.0	16.60	6 3.0
23	7 14 23.42	3.335	25 9 15.5	9.53	7 11.7	23	8 5 40.36	4.734	22 27 55.3	16.86	6 0.9
24	7 15 41.45	3.401	25 5 24.4	9.72	7 9.1	24	8 7 34.30	4.761	22 21 7.4	17.13	5 58.9
25	7 17 3.64	3.465	25 1 28.6	9.92	7 6.5	25	8 9 28.88	4.787	22 14 13.1	17.40	5 56.9
26	7 18 27.56	3.528	24 57 28.0	10.12	7 3.9	26	8 11 24.08	4.813	22 7 12.2	17.67	5 54.9
27	7 19 52.98	3.590	24 53 22.5	10.33	7 1.4	27	8 13 19.87	4.838	22 0 4.7	17.94	5 52.9
28	7 21 19.85	3.650	24 49 12.0	10.54	6 58.9	28	8 15 16.25	4.862	21 52 50.8	18.21	5 50.9
29	7 22 48.14	3.709	24 44 56.5	10.76	6 56.4	29	8 17 13.20	4.884	21 45 30.3	18.49	5 48.9
30	7 24 17.82	3.766	24 40 35.8	10.97	6 53.9	30	8 19 10.70	4.906	21 38 3.2	18.77	5 46.9
31	7 25 48.86	3.822	24 36 9.9	11.19	6 51.5	31	8 21 8.74	4.928	21 30 29.4	19.04	5 44.9
32	7 27 21.21	3.875	+24 31 38.6	11.41	6 49.1	32	8 23 7.29	4.951	+21 22 49.0	19.32	5 42.9
Day of the Month,						Day of the Month,					
6th.						7th.					
14th.						15th.					
22d.						23d.					
30th.											
Polar Semidiameter						Polar Semidiameter,					
Horizontal Parallax						Horizontal Parallax,					
5.4						4.1					
5.0						3.8					
4.7						3.6					
8.5						6.9					
8.5						6.5					
7.9						6.2					
7.4											

GREENWICH MEAN TIME.

MAY.										JUNE.									
Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.				Noon.						Noon.				Noon.				
	h	m	s	s	°	'	"	"	h	m	s	s	°	'	"	"	h	m	s
1	8	21	8.74	4.890	+21	30	29.4	19.04	5 44.9	1	9	25	12.48	5.381	+16	42	0.5	27.38	4 46.8
2	8	23	7.29	4.951	21	22	49.0	19.22	5 42.9	2	9	27	20.50	5.388	16	31	0.3	27.64	4 45.0
3	8	25	6.35	4.972	21	15	2.0	19.60	5 40.9	3	9	29	28.70	5.345	16	19	54.1	27.80	4 43.2
4	8	27	5.90	4.992	21	7	8.4	19.88	5 39.0	4	9	31	37.07	5.392	16	8	41.9	28.14	4 41.4
5	8	29	5.03	5.011	20	59	8.2	20.15	5 37.0	5	9	33	45.61	5.359	15	57	23.7	28.39	4 39.6
6	8	31	6.41	5.030	20	51	1.3	20.43	5 35.1	6	9	35	54.30	5.365	15	45	59.6	28.63	4 37.8
7	8	33	7.33	5.048	20	42	47.8	20.70	5 33.2	7	9	38	3.14	5.371	15	34	29.7	28.87	4 36.0
8	8	35	8.67	5.065	20	34	27.8	20.98	5 31.3	8	9	40	12.10	5.377	15	22	54.0	29.11	4 34.2
9	8	37	10.41	5.081	20	26	1.0	21.25	5 29.4	9	9	42	21.22	5.382	15	11	12.5	29.35	4 32.5
10	8	39	12.55	5.097	20	17	27.8	21.53	5 27.5	10	9	44	30.44	5.387	14	59	25.3	29.59	4 30.7
11	8	41	15.06	5.112	20	8	48.0	21.80	5 25.6	11	9	46	39.78	5.392	14	47	32.4	29.83	4 28.9
12	8	43	17.92	5.127	20	0	1.6	22.07	5 23.7	12	9	48	49.24	5.397	14	35	33.9	30.06	4 27.1
13	8	45	21.12	5.141	19	51	8.7	22.34	5 21.8	13	9	50	58.82	5.401	14	23	29.9	30.29	4 25.4
14	8	47	24.64	5.154	19	42	9.2	22.62	5 19.9	14	9	53	8.52	5.406	14	11	20.4	30.52	4 23.6
15	8	49	28.47	5.167	19	33	3.2	22.89	5 18.0	15	9	55	18.32	5.410	13	59	5.4	30.74	4 21.8
16	8	51	32.61	5.180	19	23	50.7	23.16	5 16.2	16	9	57	28.21	5.414	13	46	45.1	30.97	4 20.0
17	8	53	37.04	5.191	19	14	31.6	23.43	5 14.3	17	9	59	38.21	5.418	13	34	19.4	31.19	4 18.2
18	8	55	41.75	5.202	19	5	6.2	23.69	5 12.5	18	10	1	48.30	5.422	13	21	49.3	31.41	4 16.4
19	8	57	46.72	5.213	18	55	34.3	23.96	5 10.6	19	10	3	58.49	5.426	13	9	12.1	31.63	4 14.6
20	8	59	51.95	5.223	18	45	56.0	24.23	5 8.8	20	10	6	8.78	5.431	12	56	30.6	31.85	4 12.8
21	9	1	57.43	5.231	18	36	11.3	24.50	5 6.9	21	10	8	19.18	5.435	12	43	43.9	32.06	4 11.1
22	9	4	3.15	5.244	18	26	20.1	24.77	5 5.1	22	10	10	29.68	5.439	12	30	52.2	32.27	4 9.3
23	9	6	9.10	5.254	18	16	22.5	25.04	5 3.2	23	10	12	40.28	5.443	12	17	55.5	32.48	4 7.5
24	9	8	15.29	5.264	18	6	18.5	25.30	5 1.4	24	10	14	50.98	5.448	12	4	53.7	32.68	4 5.7
25	9	10	21.70	5.273	17	56	8.1	25.57	4 59.5	25	10	17	1.79	5.452	11	51	46.9	32.88	4 4.0
26	9	12	23.34	5.282	17	45	51.5	25.83	4 57.7	26	10	19	12.70	5.457	11	38	35.3	33.09	4 2.2
27	9	14	35.19	5.291	17	35	28.7	26.09	4 55.9	27	10	21	23.71	5.461	11	25	18.8	33.29	4 0.5
28	9	16	42.25	5.299	17	24	59.6	26.35	4 54.1	28	10	23	34.83	5.466	11	11	57.6	33.49	3 58.7
29	9	18	49.51	5.307	17	14	24.2	26.61	4 52.3	29	10	25	46.07	5.470	10	58	31.6	33.69	3 57.0
30	9	20	56.97	5.315	17	3	42.5	26.87	4 50.4	30	10	27	57.41	5.475	10	45	0.8	33.88	3 55.2
31	9	23	4.63	5.323	16	52	54.6	27.13	4 48.6	31	10	30	8.85	5.479	10	31	25.5	34.07	3 53.5
32	9	25	12.48	5.331	+16	42	0.5	27.39	4 46.8	32	10	32	20.40	5.484	+10	17	45.7	34.26	3 51.8
Day of the Month,										Day of the Month,									
1st.										2d.									
9th.										10th.									
17th.										18th.									
25th.										26th.									
Polar Semidiameter										Polar Semidiameter									
Horizontal Parallax										Horizontal Parallax									
3.5										2.9									
3.3										2.8									
3.1										2.7									
3.0										2.6									
5.9										4.9									
5.6										4.7									
5.3										4.6									
5.1										4.5									

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	10 30 8.85	5.479	+10 31 25.5	31.07	3 53.5	1	11 39 0.84	5.649	+ 2 58 44.4	38.47	3 0.3
2	10 32 20.40	5.484	10 17 45.7	34.26	3 51.8	2	11 41 16.49	5.657	2 43 20.1	38.56	2 58.6
3	10 34 32.07	5.488	10 4 1.5	34.44	3 50.1	3	11 43 32.33	5.665	2 27 53.7	38.63	2 56.0
4	10 36 43.85	5.492	9 50 12.7	34.63	3 48.3	4	11 45 48.36	5.673	2 12 25.3	38.73	2 55.2
5	10 38 55.73	5.497	9 36 19.7	34.80	3 46.6	5	11 48 4.59	5.680	1 56 54.7	38.81	2 53.5
6	10 41 7.71	5.501	9 22 22.6	34.98	3 44.8	6	11 50 21.01	5.688	1 41 22.3	38.89	2 51.0
7	10 43 19.79	5.506	9 8 21.3	35.15	3 43.1	7	11 52 37.63	5.696	1 25 49.1	38.96	2 50.2
8	10 45 31.97	5.510	8 54 15.8	35.32	3 41.3	8	11 54 54.46	5.705	1 10 12.2	39.03	2 48.6
9	10 47 44.25	5.514	8 40 6.3	35.48	3 39.6	9	11 57 11.50	5.714	0 54 34.7	39.09	2 46.9
10	10 49 56.64	5.518	8 25 52.8	35.64	3 37.9	10	11 59 28.75	5.723	0 38 55.8	39.15	2 45.3
11	10 52 9.14	5.523	8 11 35.5	35.80	3 36.2	11	12 1 46.21	5.732	0 23 15.5	39.21	2 43.6
12	10 54 21.75	5.527	7 57 14.4	35.96	3 34.6	12	12 4 3.89	5.741	+ 0 7 33.9	39.26	2 42.0
13	10 56 34.46	5.533	7 42 49.6	36.11	3 32.7	13	12 6 21.80	5.751	- 0 8 8.9	39.31	2 40.3
14	10 59 47.27	5.539	7 28 21.2	36.26	3 31.0	14	12 8 39.94	5.761	0 23 52.9	39.35	2 38.7
15	11 1 0.19	5.541	7 13 49.2	36.41	3 29.3	15	12 10 58.32	5.771	0 39 37.9	39.39	2 37.1
16	11 3 13.23	5.546	6 59 13.6	36.56	3 27.5	16	12 13 16.95	5.782	0 55 23.8	39.43	2 35.5
17	11 5 26.37	5.551	6 44 34.6	36.70	3 25.8	17	12 15 35.84	5.798	1 11 10.6	39.46	2 33.9
18	11 7 39.63	5.556	6 29 52.2	36.84	3 24.1	18	12 17 54.99	5.804	1 26 58.2	39.49	2 32.3
19	11 9 53.02	5.561	6 15 6.6	36.97	3 22.4	19	12 20 14.40	5.815	1 42 46.4	39.52	2 30.7
20	11 12 6.55	5.566	6 0 17.8	37.11	3 20.7	20	12 22 34.09	5.826	1 58 35.2	39.54	2 29.1
21	11 14 20.22	5.573	5 45 25.8	37.24	3 19.0	21	12 24 54.07	5.838	2 14 24.5	39.56	2 27.5
22	11 16 34.02	5.578	5 30 30.7	37.37	3 17.3	22	12 27 14.32	5.850	2 30 14.1	39.58	2 25.9
23	11 18 47.97	5.584	5 15 32.6	37.49	3 15.6	23	12 29 34.86	5.863	2 46 4.1	39.60	2 24.3
24	11 21 2.07	5.590	5 0 31.5	37.61	3 13.9	24	12 31 55.71	5.876	3 1 54.4	39.62	2 22.7
25	11 23 16.32	5.597	4 45 27.4	37.73	3 12.2	25	12 34 16.89	5.890	3 17 44.9	39.62	2 21.1
26	11 25 30.73	5.604	4 30 20.4	37.85	3 10.5	26	12 36 38.38	5.903	3 33 35.3	39.62	2 19.5
27	11 27 45.32	5.611	4 15 10.7	37.97	3 8.8	27	12 39 0.19	5.917	3 49 25.5	39.61	2 17.9
28	11 30 0.08	5.619	3 59 58.3	38.07	3 7.1	28	12 41 22.34	5.931	4 5 15.7	39.59	2 16.3
29	11 32 15.00	5.626	3 44 43.4	38.17	3 5.4	29	12 43 44.83	5.945	4 21 5.6	39.57	2 14.7
30	11 34 30.10	5.633	3 29 26.1	38.27	3 3.7	30	12 46 7.64	5.958	4 36 55.1	39.55	2 13.1
31	11 36 45.38	5.641	3 14 6.4	38.37	3 2.0	31	12 48 30.80	5.972	4 52 44.1	39.53	2 11.5
32	11 39 0.84	5.649	+ 2 58 44.4	38.47	3 0.3	32	12 50 54.31	5.987	- 5 8 32.3	39.50	2 10.0
Day of the Month,		4th.	13th.	20th.	28th.	Day of the Month,		5th.	13th.	21st.	29th.
Polar Semidiameter		" 2.5	" 2.4	" 2.4	" 2.3	Polar Semidiameter		" 2.3	" 2.2	" 2.2	" 2.2
Horizontal Parallax		4.3	4.2	4.1	4.0	Horizontal Parallax		4.0	3.9	3.8	3.8

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]			^h ^m ^s	^s	[°] ['] ["]	["]	
1	12 50 54.31	5.987	5 8 32.3	39.50	2 10.0	1	14 5 51.09	6.546	12 47 44.3	36.25	1 26.8
2	12 53 18.18	6.002	5 24 19.8	39.47	2 8.4	2	14 8 28.47	6.569	13 2 11.9	36.08	1 25.5
3	12 55 42.40	6.017	5 40 6.5	39.43	2 6.9	3	14 11 6.39	6.592	13 16 34.7	35.85	1 24.2
4	12 58 6.98	6.032	5 55 52.2	39.38	2 5.4	4	14 13 44.86	6.615	13 30 52.5	35.64	1 22.9
5	13 0 31.93	6.048	6 11 36.7	39.33	2 3.9	5	14 16 23.88	6.638	13 45 5.4	35.42	1 21.6
6	13 2 57.95	6.063	6 27 20.0	39.28	2 2.4	6	14 19 3.46	6.661	13 59 13.1	35.20	1 20.3
7	13 5 22.95	6.079	6 43 2.0	39.23	2 0.9	7	14 21 43.59	6.685	14 13 15.3	34.97	1 19.1
8	13 7 49.03	6.095	6 58 42.5	39.15	1 59.4	8	14 24 24.28	6.709	14 27 11.9	34.74	1 17.8
9	13 10 15.50	6.111	7 14 21.4	39.08	1 57.9	9	14 27 5.54	6.733	14 41 2.8	34.50	1 16.6
10	13 12 42.36	6.128	7 29 58.5	39.01	1 56.4	10	14 29 47.37	6.756	14 54 47.9	34.25	1 15.3
11	13 15 9.63	6.145	7 45 33.8	38.93	1 54.9	11	14 32 29.78	6.780	15 8 27.0	34.00	1 14.1
12	13 17 37.31	6.162	8 1 7.1	38.85	1 53.4	12	14 35 12.77	6.804	15 21 59.9	33.74	1 12.8
13	13 20 5.41	6.180	8 16 38.4	38.76	1 51.9	13	14 37 56.36	6.829	15 35 26.4	33.47	1 11.6
14	13 22 33.94	6.198	8 32 7.5	38.66	1 50.4	14	14 40 40.54	6.854	15 48 46.4	33.20	1 10.4
15	13 25 2.89	6.216	8 47 34.2	38.56	1 49.0	15	14 43 25.32	6.879	16 1 59.9	32.92	1 9.2
16	13 27 32.28	6.234	9 2 58.5	38.46	1 47.5	16	14 46 10.71	6.884	16 15 6.7	32.63	1 8.0
17	13 30 2.12	6.253	9 18 20.2	38.35	1 46.1	17	14 48 56.71	6.900	16 28 6.4	32.34	1 6.8
18	13 32 32.41	6.272	9 33 39.2	38.23	1 44.7	18	14 51 43.32	6.955	16 40 58.9	32.04	1 5.6
19	13 35 3.17	6.291	9 48 55.4	38.11	1 43.3	19	14 54 30.55	6.981	16 53 44.1	31.73	1 4.5
20	13 37 34.40	6.311	10 4 8.7	37.99	1 41.9	20	14 57 18.40	7.007	17 6 21.9	31.41	1 3.3
21	13 40 6.12	6.331	10 19 19.0	37.86	1 40.5	21	15 0 6.89	7.033	17 18 52.2	31.09	1 2.2
22	13 42 38.34	6.352	10 34 26.0	37.72	1 39.1	22	15 2 56.01	7.059	17 31 14.7	30.76	1 1.1
23	13 45 11.04	6.373	10 49 29.8	37.58	1 37.7	23	15 5 45.76	7.086	17 43 29.4	30.43	1 0.0
24	13 47 44.24	6.394	11 4 30.2	37.44	1 36.3	24	15 8 36.15	7.113	17 55 36.0	30.09	0 58.9
25	13 50 17.94	6.416	11 19 26.9	37.29	1 34.9	25	15 11 27.18	7.140	18 7 34.3	29.75	0 57.8
26	13 52 52.16	6.437	11 34 19.9	37.13	1 33.5	26	15 14 18.84	7.166	18 19 24.2	29.40	0 56.7
27	13 55 26.90	6.459	11 49 9.2	36.97	1 32.2	27	15 17 11.14	7.193	18 31 5.5	29.04	0 55.7
28	13 58 2.16	6.480	12 3 54.4	36.80	1 30.8	28	15 20 4.08	7.219	18 42 38.1	28.67	0 54.6
29	14 0 37.94	6.502	12 18 35.4	36.63	1 29.5	29	15 22 57.65	7.246	18 54 1.6	28.29	0 53.6
30	14 3 14.25	6.524	12 33 12.0	36.44	1 28.1	30	15 25 51.86	7.272	19 5 16.0	27.90	0 52.5
31	14 5 51.09	6.546	12 47 44.3	36.25	1 26.8	31	15 28 46.70	7.299	19 16 21.1	27.51	0 51.5
32	14 8 28.47	6.569	13 2 11.9	36.05	1 25.5	32	15 31 42.18	7.325	19 27 16.6	27.11	0 50.5
Day of the Month,						Day of the Month,					
		6th.	14th.	22d.	30th.			9th.	16th.	24th.	
Polar Semidiameter		"	"	"	"	Polar Semidiameter,		"	"	"	
Horizontal Parallax		3.7	3.7	3.6	3.6	Horizontal Parallax,		3.6	3.6	3.6	

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	15 31 42.18	7.335	19 27 16.6	27.11	0 50.5	1	17 4 6.84	8.043	23 27 45.3	11.98	0 24.6
2	15 34 38.28	7.352	19 38 2.5	26.70	0 49.5	2	17 7 20.11	8.062	23 32 25.8	11.38	0 23.9
3	15 37 35.01	7.378	19 48 38.6	26.29	0 48.5	3	17 10 33.81	8.080	23 36 51.8	10.77	0 23.2
4	15 40 32.37	7.404	19 59 4.8	26.87	0 47.5	4	17 13 47.94	8.098	23 41 3.2	10.16	0 22.5
5	15 43 30.35	7.430	20 9 20.8	26.44	0 46.5	5	17 17 2.50	8.115	23 44 50.9	9.54	0 21.8
6	15 46 28.96	7.455	20 19 26.4	26.01	0 45.6	6	17 20 17.46	8.132	23 48 41.7	8.92	0 21.1
7	15 49 28.18	7.481	20 29 21.4	24.57	0 44.6	7	17 23 32.83	8.148	23 52 8.5	8.30	0 20.4
8	15 52 28.02	7.506	20 39 5.7	24.13	0 43.7	8	17 26 48.57	8.164	23 55 20.3	7.67	0 19.7
9	15 55 28.47	7.531	20 48 39.2	23.68	0 42.7	9	17 30 4.68	8.179	23 58 17.0	7.04	0 19.0
10	15 58 29.53	7.556	20 58 1.7	23.20	0 41.8	10	17 33 21.14	8.193	24 0 58.5	6.40	0 18.4
11	16 1 31.20	7.582	21 7 13.0	22.73	0 40.9	11	17 36 37.95	8.207	24 3 24.8	5.76	0 17.7
12	16 4 33.49	7.608	21 16 12.9	22.25	0 40.0	12	17 39 55.09	8.221	24 5 35.6	5.12	0 17.1
13	16 7 36.39	7.634	21 25 1.3	21.77	0 39.1	13	17 43 12.55	8.234	24 7 30.9	4.47	0 16.4
14	16 10 39.90	7.659	21 33 26.0	21.26	0 38.2	14	17 46 30.32	8.247	24 9 10.6	3.82	0 15.8
15	16 13 44.01	7.684	21 42 3.0	20.78	0 37.3	15	17 49 48.39	8.259	24 10 34.5	3.16	0 15.1
16	16 16 48.73	7.709	21 50 16.0	20.26	0 36.5	16	17 53 6.74	8.270	24 11 42.6	2.50	0 14.5
17	16 19 54.04	7.734	21 58 16.8	19.77	0 35.6	17	17 56 25.35	8.281	24 12 34.9	1.84	0 13.8
18	16 22 59.93	7.758	22 6 5.2	19.26	0 34.8	18	17 59 44.21	8.291	24 13 11.4	1.18	0 13.2
19	16 26 6.41	7.782	22 13 41.2	18.78	0 33.9	19	18 3 3.32	8.301	24 13 32.1	0.52	0 12.6
20	16 29 13.46	7.806	22 21 4.6	18.21	0 33.1	20	18 6 22.65	8.310	24 13 36.9	0.15	0 12.0
21	16 32 21.09	7.830	22 28 15.1	17.67	0 32.3	21	18 9 42.19	8.318	24 13 25.7	0.61	0 11.4
22	16 35 29.28	7.853	22 35 12.7	17.13	0 31.5	22	18 13 1.02	8.325	24 12 58.5	1.48	0 10.8
23	16 38 38.03	7.876	22 41 57.1	16.58	0 30.7	23	18 16 21.81	8.332	24 12 15.3	2.15	0 10.2
24	16 41 47.33	7.899	22 48 23.3	16.02	0 29.9	24	18 19 41.87	8.338	24 11 15.9	2.82	0 9.6
25	16 44 57.16	7.920	22 54 46.2	15.46	0 29.1	25	18 23 2.07	8.343	24 10 0.4	3.49	0 9.0
26	16 48 7.52	7.943	23 0 50.6	14.89	0 28.3	26	18 26 22.38	8.348	24 8 28.8	4.17	0 8.4
27	16 51 18.40	7.963	23 6 41.4	14.32	0 27.5	27	18 29 42.79	8.352	24 6 40.9	4.84	0 7.8
28	16 54 29.80	7.984	23 12 18.3	13.74	0 26.8	28	18 33 3.28	8.356	24 4 36.8	5.52	0 7.1
29	16 57 41.68	8.004	23 17 41.3	13.16	0 26.0	29	18 36 23.84	8.358	24 2 16.5	6.19	0 6.5
30	17 0 54.03	8.024	23 22 50.4	12.57	0 25.3	30	18 39 44.45	8.360	23 59 40.1	6.87	0 5.9
31	17 4 6.84	8.043	23 27 45.3	11.98	0 24.6	31	18 43 5.10	8.361	23 56 47.5	7.54	0 5.3
32	17 7 20.11	8.062	23 32 25.8	11.39	0 23.9	32	18 46 25.76	8.361	23 53 38.7	8.21	0 4.7
Day of the Month,						Day of the Month,					
1st.						3d.					
9th.						11th.					
17th.						19th.					
25th.						27th.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
2.1						2.1					
3.5						3.5					

GREENWICH MEAN TIME.

JANUARY.										FEBRUARY.												
Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.			
	Noon.				Noon.						Noon.				Noon.							
	h	m	s	s	°	'	"	"	h	m		h	m	s	s	°	'	"	"	h	m	
1	20	37	3.35	2.316	19	11	25.8	8.42	1 54.1	1	21	6	20.40	2.395	17	15	17.1	10.17	0 21.6			
2	20	37	58.97	2.321	19	8	2.8	8.49	1 51.1	2	21	7	26.87	2.394	17	11	12.6	10.21	0 18.6			
3	20	38	54.74	2.327	19	4	38.2	8.56	1 48.1	3	21	8	24.31	2.393	17	7	7.2	10.23	0 15.6			
4	20	39	50.66	2.333	19	1	11.9	8.63	1 45.1	4	21	9	21.71	2.391	17	3	1.0	10.29	0 12.6			
5	20	40	46.71	2.339	18	57	44.0	8.70	1 42.1	5	21	10	19.08	2.389	16	58	53.6	10.32	0 9.6			
6	20	41	42.89	2.344	18	54	14.5	8.76	1 39.1	6	21	11	16.40	2.387	16	54	45.5	10.36	0 6.6			
7	20	42	39.20	2.349	18	50	43.5	8.83	1 36.1	7	21	12	13.67	2.385	16	50	36.6	10.39	0 3.7			
8	20	43	35.63	2.354	18	47	10.9	8.89	1 33.1	8	21	13	10.88	2.383	16	46	26.9	10.42	0 0.7			
9	20	44	32.17	2.358	18	43	36.8	8.96	1 30.1	9	21	14	8.02	2.380	16	42	16.4	10.45	23 54.7			
10	20	45	28.82	2.362	18	40	1.2	9.02	1 27.1	10	21	15	5.10	2.377	16	38	5.2	10.48	23 51.7			
11	20	46	25.57	2.366	18	36	24.0	9.08	1 24.2	11	21	16	2.10	2.374	16	33	53.3	10.51	23 48.7			
12	20	47	22.40	2.370	18	32	45.4	9.14	1 21.2	12	21	16	59.02	2.370	16	29	40.8	10.54	23 45.7			
13	20	48	19.31	2.373	18	29	5.4	9.20	1 18.2	13	21	17	55.85	2.366	16	25	27.6	10.56	23 42.7			
14	20	49	16.30	2.376	18	25	23.8	9.26	1 15.2	14	21	18	52.59	2.362	16	21	13.7	10.59	23 39.8			
15	20	50	13.37	2.379	18	21	40.9	9.32	1 12.2	15	21	19	49.24	2.358	16	16	59.4	10.61	23 36.8			
16	20	51	10.50	2.382	18	17	56.6	9.38	1 9.2	16	21	20	45.80	2.354	16	12	44.4	10.63	23 33.8			
17	20	52	7.69	2.384	18	14	11.0	9.44	1 6.2	17	21	21	42.25	2.350	16	8	29.9	10.65	23 30.8			
18	20	53	4.94	2.386	18	10	24.0	9.49	1 3.2	18	21	22	38.59	2.346	16	4	12.9	10.67	23 27.8			
19	20	54	2.24	2.388	18	6	35.7	9.55	1 0.3	19	21	23	34.82	2.340	15	59	56.4	10.69	23 24.8			
20	20	54	59.58	2.390	18	2	46.0	9.60	0 57.3	20	21	24	30.94	2.335	15	55	39.6	10.71	23 21.8			
21	20	55	56.95	2.392	17	58	55.1	9.65	0 54.3	21	21	25	26.94	2.330	15	51	22.3	10.73	23 18.8			
22	20	56	54.37	2.393	17	55	2.9	9.70	0 51.3	22	21	26	22.80	2.325	15	47	4.7	10.75	23 15.8			
23	20	57	51.82	2.394	17	51	9.6	9.75	0 48.3	23	21	27	18.54	2.320	15	42	46.7	10.76	23 12.7			
24	20	58	49.29	2.395	17	47	15.0	9.80	0 45.4	24	21	28	14.15	2.314	15	38	28.4	10.77	23 9.7			
25	20	59	46.79	2.396	17	43	19.2	9.85	0 42.4	25	21	29	9.63	2.308	15	34	9.8	10.78	23 6.7			
26	21	0	44.30	2.397	17	39	22.2	9.90	0 39.4	26	21	30	4.96	2.302	15	29	51.0	10.78	23 3.7			
27	21	1	41.82	2.397	17	35	24.1	9.95	0 36.4	27	21	31	0.14	2.296	15	25	32.1	10.79	23 0.7			
28	21	2	39.35	2.397	17	31	24.9	9.99	0 33.5	28	21	31	55.17	2.290	15	21	12.9	10.79	22 57.7			
29	21	3	36.87	2.397	17	27	24.5	10.04	0 30.5	29	21	32	50.05	2.283	15	16	53.6	10.80	22 54.6			
30	21	4	34.39	2.397	17	23	23.1	10.08	0 27.5	30	21	33	44.76	2.276	15	12	34.2	10.80	22 51.6			
31	21	5	31.90	2.396	17	19	20.6	10.13	0 24.5	31	21	34	39.31	2.269	15	8	14.8	10.81	22 48.6			
32	21	6	29.40	2.395	17	15	17.1	10.17	0 21.6	32	21	35	33.69	2.262	15	3	55.4	10.81	22 45.6			
Day of the Month,										Day of the Month,												
				1st.	11th.	21st.	31st.					1st.	11th.	21st.	31st.							
Polar Semidiameter				"	"	"	"	Polar Semidiameter				"	"	"	"	Polar Semidiameter						
Horizontal Parallax				15.6	15.5	15.4	15.4	Horizontal Parallax				15.4	15.4	15.5	15.6	Horizontal Parallax						

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	21 32 50.05	2.283	15 16 53.6	10.80	22 54.6	1	21 59 25.48	1.974	13 5 26.1	10.14	21 19.1
2	21 33 44.76	2.276	15 12 34.2	10.80	22 51.6	2	22 0 12.71	1.961	13 1 23.4	10.09	21 16.0
3	21 34 39.31	2.269	15 8 14.8	10.81	22 48.6	3	22 0 59.62	1.948	12 57 21.9	10.04	21 12.8
4	21 35 33.69	2.262	15 3 55.4	10.81	22 45.5	4	22 1 46.20	1.934	12 53 21.7	9.99	21 9.7
5	21 36 27.88	2.255	14 59 36.1	10.81	22 42.5	5	22 2 32.45	1.920	12 49 22.7	9.94	21 6.5
6	21 37 21.89	2.247	14 55 16.8	10.80	22 39.5	6	22 3 18.37	1.906	12 45 25.1	9.88	21 3.3
7	21 38 15.71	2.239	14 50 57.6	10.80	22 36.5	7	22 4 3.94	1.892	12 41 28.9	9.82	21 0.1
8	21 39 9.33	2.231	14 46 38.5	10.79	22 33.4	8	22 4 49.16	1.877	12 37 34.1	9.76	20 56.9
9	21 40 2.75	2.222	14 42 19.6	10.78	22 30.4	9	22 5 34.03	1.862	12 33 40.7	9.70	20 53.7
10	21 40 55.96	2.213	14 38 1.0	10.77	22 27.3	10	22 6 18.55	1.847	12 29 48.9	9.63	20 50.5
11	21 41 48.97	2.204	14 33 42.6	10.76	22 24.3	11	22 7 2.70	1.832	12 25 58.6	9.56	20 47.3
12	21 42 41.76	2.195	14 29 24.6	10.75	22 21.2	12	22 7 46.49	1.817	12 22 10.0	9.49	20 44.1
13	21 43 34.32	2.186	14 25 6.8	10.73	22 18.1	13	22 8 29.90	1.801	12 18 22.9	9.42	20 40.9
14	21 44 26.66	2.176	14 20 49.5	10.71	22 15.1	14	22 9 12.94	1.786	12 14 37.6	9.35	20 37.7
15	21 45 18.77	2.166	14 16 32.7	10.69	22 12.0	15	22 9 55.59	1.770	12 10 54.0	9.28	20 34.5
16	21 46 10.64	2.156	14 12 16.2	10.67	22 8.9	16	22 10 37.85	1.754	12 7 12.1	9.21	20 31.3
17	21 47 2.28	2.146	14 8 0.2	10.65	22 5.8	17	22 11 19.73	1.737	12 3 32.0	9.13	20 28.0
18	21 47 53.68	2.136	14 3 44.8	10.63	22 2.8	18	22 12 1.21	1.720	11 59 53.8	9.05	20 24.8
19	21 48 44.83	2.126	13 59 30.0	10.61	21 59.7	19	22 12 42.29	1.703	11 56 17.4	8.97	20 21.5
20	21 49 35.74	2.116	13 55 15.7	10.59	21 56.6	20	22 13 22.97	1.686	11 52 43.0	8.89	20 18.2
21	21 50 26.39	2.105	13 51 2.1	10.56	21 53.5	21	22 14 3.24	1.669	11 49 10.6	8.81	20 14.9
22	21 51 16.78	2.094	13 46 49.1	10.53	21 50.4	22	22 14 43.10	1.652	11 45 40.2	8.72	20 11.7
23	21 52 6.91	2.083	13 42 36.9	10.50	21 47.3	23	22 15 22.54	1.635	11 42 11.9	8.64	20 8.4
24	21 52 56.77	2.072	13 38 25.4	10.47	21 44.2	24	22 16 1.55	1.617	11 38 45.6	8.56	20 5.1
25	21 53 46.36	2.061	13 34 14.8	10.43	21 41.1	25	22 16 40.13	1.599	11 35 21.5	8.48	20 1.8
26	21 54 35.68	2.049	13 30 5.0	10.39	21 38.0	26	22 17 18.28	1.581	11 31 59.7	8.39	19 58.5
27	21 55 24.72	2.037	13 25 56.0	10.35	21 34.9	27	22 17 55.99	1.562	11 28 40.1	8.27	19 55.2
28	21 56 13.47	2.025	13 21 48.0	10.31	21 31.8	28	22 18 33.24	1.543	11 25 22.8	8.17	19 51.9
29	21 57 1.92	2.013	13 17 41.0	10.27	21 28.6	29	22 19 10.04	1.524	11 22 7.9	8.07	19 48.5
30	21 57 50.08	2.000	13 13 35.0	10.23	21 25.5	30	22 19 46.37	1.504	11 18 55.4	7.97	19 45.2
31	21 58 37.93	1.987	13 9 30.0	10.19	21 22.3	31	22 20 22.24	1.484	11 15 45.4	7.87	19 41.9
32	21 59 25.48	1.974	13 5 26.1	10.14	21 19.1	32	22 20 57.63	1.464	11 12 37.9	7.76	19 38.5
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
1.4						1.5					
15.5						16.3					
15.7						16.6					
15.9						17.0					
16.2						17.4					

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	22 20 22.24	1.484	-11 15 45.4	7.87	19 41.9	1	22 34 30.89	0.760	-10 1 59.5	3.74	17 53.8
2	22 20 57.63	1.464	11 12 37.9	7.76	19 38.5	2	22 34 48.80	0.738	10 0 31.6	3.66	17 50.2
3	22 21 32.54	1.444	11 9 32.9	7.65	19 35.1	3	22 35 6.06	0.705	9 59 7.6	3.42	17 46.5
4	22 22 6.96	1.424	11 6 33.5	7.54	19 31.8	4	22 35 22.65	0.677	9 57 47.5	3.26	17 42.8
5	22 22 40.89	1.403	11 3 30.8	7.43	19 28.4	5	22 35 38.58	0.649	9 56 31.2	3.10	17 39.1
6	22 23 14.32	1.382	11 0 33.8	7.32	19 25.0	6	22 35 53.84	0.621	9 55 18.9	2.92	17 35.4
7	22 23 47.24	1.361	10 57 39.6	7.21	19 21.6	7	22 36 8.43	0.593	9 54 10.7	2.76	17 31.7
8	22 24 19.65	1.340	10 54 48.1	7.09	19 18.2	8	22 36 22.35	0.565	9 53 6.5	2.59	17 28.0
9	22 24 51.54	1.318	10 51 59.5	6.97	19 14.8	9	22 36 35.58	0.537	9 52 6.4	2.42	17 24.3
10	22 25 22.92	1.296	10 49 13.7	6.85	19 11.4	10	22 36 48.13	0.509	9 51 10.3	2.25	17 20.6
11	22 25 53.77	1.274	10 46 30.9	6.73	19 7.9	11	22 36 59.99	0.480	9 50 18.4	2.08	17 16.9
12	22 26 24.09	1.252	10 43 51.0	6.60	19 4.5	12	22 37 11.17	0.451	9 49 30.6	1.91	17 13.1
13	22 26 53.86	1.230	10 41 14.1	6.47	19 1.0	13	22 37 21.65	0.422	9 48 46.9	1.73	17 9.3
14	22 27 23.11	1.207	10 38 40.3	6.34	18 57.6	14	22 37 31.44	0.393	9 48 7.4	1.56	17 5.6
15	22 27 51.81	1.184	10 36 9.6	6.22	18 54.1	15	22 37 40.52	0.364	9 47 32.0	1.39	17 1.8
16	22 28 19.96	1.161	10 33 42.0	6.09	18 50.7	16	22 37 48.91	0.335	9 47 0.9	1.21	16 58.0
17	22 28 47.55	1.138	10 31 17.5	5.96	18 47.2	17	22 37 56.59	0.305	9 46 34.0	1.03	16 54.2
18	22 29 14.58	1.115	10 28 56.2	5.82	18 43.7	18	22 38 3.56	0.276	9 46 11.4	0.86	16 50.4
19	22 29 41.05	1.091	10 26 38.2	5.68	18 40.2	19	22 38 9.82	0.246	9 45 53.0	0.68	16 46.6
20	22 30 6.94	1.067	10 24 23.5	5.54	18 36.7	20	22 38 15.37	0.216	9 45 38.8	0.50	16 42.7
21	22 30 32.26	1.043	10 22 12.1	5.40	18 33.2	21	22 38 20.19	0.186	9 45 29.0	0.32	16 38.8
22	22 30 56.99	1.018	10 20 4.0	5.26	18 29.7	22	22 38 24.30	0.156	9 45 23.5	+0.14	16 34.9
23	22 31 21.13	0.993	10 17 59.4	5.12	18 26.2	23	22 38 27.68	0.126	9 45 22.3	-0.04	16 31.0
24	22 31 44.63	0.968	10 15 58.3	4.97	18 22.6	24	22 38 30.34	0.096	9 45 25.5	0.22	16 27.1
25	22 32 7.62	0.943	10 14 0.7	4.83	18 19.0	25	22 38 32.27	0.065	9 45 33.0	0.40	16 23.2
26	22 32 29.96	0.918	10 12 6.7	4.68	18 15.4	26	22 38 33.46	0.035	9 45 44.8	0.58	16 19.3
27	22 32 51.69	0.893	10 10 16.3	4.53	18 11.8	27	22 38 33.93	+0.004	9 46 1.0	0.77	16 15.4
28	22 33 12.80	0.867	10 8 29.5	4.38	18 8.2	28	22 38 33.66	-0.027	9 46 21.6	0.95	16 11.5
29	22 33 33.23	0.841	10 6 46.3	4.23	18 4.6	29	22 38 32.65	0.038	9 46 46.5	1.13	16 7.5
30	22 33 53.13	0.814	10 5 6.9	4.06	18 1.0	30	22 38 30.90	0.008	9 47 15.8	1.30	16 3.5
31	22 34 12.33	0.787	10 3 31.4	3.90	17 57.4	31	22 38 28.42	0.119	9 47 49.4	1.47	15 59.5
32	22 34 30.89	0.760	-10 1 59.5	3.74	17 53.8	32	22 38 25.20	0.149	9 48 27.3	1.65	15 55.5
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
1.6						1.8					
1.7						1.8					
1.7						1.9					
1.8						1.9					
17.4						19.1					
17.9						19.8					
18.5						20.5					
19.1						21.1					

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m		^h ^m ^s	^s	[°] ['] ["]	["]	^h ^m
1	22 38 28.42	0.119	9 47 49.4	1.47	15 59.5	1	22 31 28.30	0.963	10 37 59.3	6.23	13 50.5
2	22 38 25.20	0.149	9 48 27.3	1.65	15 55.5	2	22 31 4.92	0.984	10 40 29.9	6.33	13 46.2
3	22 38 21.25	0.180	9 49 9.5	1.83	15 51.5	3	22 30 41.05	1.004	10 43 3.1	6.43	13 41.8
4	22 38 16.57	0.210	9 49 56.0	2.02	15 47.5	4	22 30 16.71	1.023	10 45 38.7	6.53	13 37.5
5	22 38 11.16	0.240	9 50 46.8	2.21	15 43.5	5	22 29 51.93	1.042	10 48 16.4	6.62	13 33.1
6	22 38 5.03	0.270	9 51 41.8	2.39	15 39.4	6	22 29 26.70	1.060	10 50 56.2	6.70	13 28.8
7	22 37 58.17	0.300	9 52 41.0	2.56	15 35.4	7	22 29 1.05	1.077	10 53 38.0	6.78	13 24.5
8	22 37 50.60	0.330	9 53 44.4	2.73	15 31.3	8	22 28 35.00	1.093	10 56 21.7	6.86	13 20.1
9	22 37 42.32	0.360	9 54 52.0	2.90	15 27.3	9	22 28 8.56	1.109	10 59 7.2	6.93	13 15.7
10	22 37 33.32	0.390	9 56 3.7	3.07	15 23.2	10	22 27 41.75	1.124	11 1 54.2	6.99	13 11.3
11	22 37 23.62	0.419	9 57 19.4	3.24	15 19.1	11	22 27 14.60	1.138	11 4 42.9	7.06	13 6.9
12	22 37 13.22	0.448	9 58 30.2	3.41	15 15.0	12	22 26 47.11	1.152	11 7 32.9	7.11	13 2.5
13	22 37 2.12	0.477	10 0 2.9	3.57	15 10.8	13	22 26 19.32	1.164	11 10 24.2	7.16	12 58.1
14	22 36 50.33	0.506	10 1 30.6	3.74	15 6.7	14	22 25 51.25	1.176	11 13 16.6	7.21	12 53.7
15	22 36 37.86	0.534	10 3 2.2	3.90	15 2.5	15	22 25 22.89	1.187	11 16 10.1	7.25	12 49.3
16	22 36 24.71	0.562	10 4 37.7	4.07	14 58.4	16	22 24 54.28	1.197	11 19 4.4	7.28	12 44.9
17	22 36 10.90	0.590	10 6 17.0	4.23	14 54.2	17	22 24 25.44	1.206	11 21 59.6	7.31	12 40.5
18	22 35 56.41	0.618	10 8 0.0	4.38	14 50.1	18	22 23 56.39	1.215	11 24 55.4	7.34	12 36.1
19	22 35 41.27	0.645	10 9 46.7	4.52	14 45.9	19	22 23 27.14	1.223	11 27 51.7	7.36	12 31.7
20	22 35 25.47	0.672	10 11 37.0	4.67	14 41.7	20	22 22 57.72	1.229	11 30 48.4	7.37	12 27.3
21	22 35 9.03	0.698	10 13 31.0	4.82	14 37.5	21	22 22 28.15	1.235	11 33 45.4	7.38	12 22.8
22	22 34 51.95	0.725	10 15 28.4	4.97	14 33.3	22	22 21 58.44	1.240	11 36 42.6	7.38	12 18.4
23	22 34 34.25	0.751	10 17 29.3	5.11	14 29.0	23	22 21 28.62	1.245	11 39 39.7	7.38	12 14.0
24	22 34 15.92	0.777	10 19 33.6	5.25	14 24.8	24	22 20 58.71	1.248	11 42 36.7	7.37	12 9.6
25	22 33 56.98	0.802	10 21 41.1	5.38	14 20.5	25	22 20 28.73	1.250	11 45 33.5	7.36	12 5.1
26	22 33 37.44	0.827	10 23 51.9	5.51	14 16.3	26	22 19 58.71	1.251	11 48 30.0	7.34	12 0.7
27	22 33 17.31	0.851	10 26 5.8	5.64	14 12.0	27	22 19 28.67	1.251	11 51 25.9	7.31	11 56.3
28	22 32 56.61	0.875	10 28 22.8	5.77	14 7.7	28	22 18 58.64	1.251	11 54 21.1	7.28	11 51.9
29	22 32 35.34	0.898	10 30 42.7	5.89	14 3.4	29	22 18 28.63	1.249	11 57 15.6	7.25	11 47.4
30	22 32 13.52	0.920	10 33 5.5	6.01	13 59.1	30	22 17 58.68	1.246	12 0 9.1	7.21	11 43.0
31	22 31 51.17	0.942	10 35 31.1	6.12	13 54.8	31	22 17 28.81	1.248	12 3 1.6	7.16	11 38.6
32	22 31 28.30	0.963	10 37 59.3	6.23	13 50.5	32	22 16 59.03	1.240	12 5 52.9	7.11	11 34.1
Day of the Month,						Day of the Month,					
	1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.	
Polar Semidiameter	" 1.9	" 2.0	" 2.1	" 2.1		Polar Semidiameter	" 2.1	" 2.1	" 2.1	" 2.1	
Horizontal Parallax	21.1	21.7	22.2	22.7		Horizontal Parallax	22.7	23.1	23.3	23.3	

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	22 16 59.03	1.240	12 5 52.9	7.11	11 34.1	1	22 4 35.36	0.715	13 13 21.4	3.59	9 23.9
2	22 16 29.38	1.234	12 8 42.9	7.03	11 29.7	2	22 4 18.54	0.687	13 14 45.6	3.43	9 19.7
3	22 15 59.87	1.226	12 11 31.4	6.99	11 25.3	3	22 4 2.40	0.658	13 16 5.9	3.26	9 15.6
4	22 15 30.54	1.218	12 14 18.3	6.92	11 20.9	4	22 3 46.95	0.630	13 17 22.2	3.09	9 11.4
5	22 15 1.40	1.209	12 17 3.6	6.85	11 16.5	5	22 3 32.18	0.601	13 18 34.4	2.92	9 7.2
6	22 14 32.47	1.200	12 19 47.0	6.77	11 12.1	6	22 3 18.12	0.571	13 19 42.5	2.76	9 3.0
7	22 14 3.77	1.191	12 22 28.5	6.69	11 7.7	7	22 3 4.77	0.541	13 20 46.5	2.59	8 58.8
8	22 13 35.33	1.180	12 25 7.9	6.60	11 3.3	8	22 2 52.14	0.511	13 21 46.3	2.42	8 54.7
9	22 13 7.17	1.167	12 27 45.3	6.51	10 58.9	9	22 2 40.24	0.481	13 22 42.1	2.24	8 50.6
10	22 12 39.30	1.154	12 30 20.4	6.41	10 54.5	10	22 2 29.07	0.450	13 23 33.7	2.07	8 46.5
11	22 12 11.76	1.141	12 32 53.1	6.31	10 50.1	11	22 2 18.63	0.419	13 24 21.0	1.89	8 42.4
12	22 11 44.55	1.127	12 35 23.4	6.21	10 45.7	12	22 2 8.96	0.388	13 25 4.2	1.70	8 38.3
13	22 11 17.70	1.111	12 37 51.2	6.10	10 41.3	13	22 2 0.02	0.357	13 25 43.1	1.52	8 34.2
14	22 10 51.22	1.095	12 40 16.3	5.99	10 36.9	14	22 1 51.83	0.326	13 26 17.8	1.34	8 30.1
15	22 10 25.13	1.078	12 42 38.8	5.88	10 32.5	15	22 1 44.40	0.294	13 26 48.2	1.17	8 26.1
16	22 9 59.46	1.061	12 44 58.5	5.76	10 28.2	16	22 1 37.73	0.263	13 27 14.3	1.00	8 22.1
17	22 9 34.21	1.043	12 47 15.2	5.63	10 23.9	17	22 1 31.82	0.231	13 27 36.2	0.83	8 18.1
18	22 9 9.41	1.024	12 49 29.0	5.51	10 19.8	18	22 1 26.67	0.199	13 27 53.9	0.65	8 14.1
19	22 8 45.07	1.004	12 51 39.7	5.38	10 15.2	19	22 1 22.30	0.166	13 28 7.3	0.47	8 10.1
20	22 8 21.22	0.984	12 53 47.3	5.25	10 10.9	20	22 1 18.70	0.134	13 28 16.3	0.29	8 6.1
21	22 7 57.86	0.963	12 55 51.6	5.11	10 6.6	21	22 1 15.88	0.101	13 28 21.1	0.11	8 2.1
22	22 7 35.02	0.941	12 57 52.6	4.97	10 2.3	22	22 1 13.84	0.069	13 28 21.7	+0.07	7 58.2
23	22 7 12.72	0.918	12 59 50.2	4.83	9 58.0	23	22 1 12.59	0.036	13 28 17.9	0.25	7 54.2
24	22 6 50.96	0.896	13 1 44.4	4.68	9 53.7	24	22 1 12.11	-0.003	13 28 9.7	0.43	7 50.3
25	22 6 29.76	0.871	13 3 35.0	4.53	9 49.4	25	22 1 12.43	+0.030	13 27 57.4	0.61	7 46.3
26	22 6 9.15	0.846	13 5 22.1	4.39	9 45.1	26	22 1 13.53	0.092	13 27 40.7	0.79	7 42.4
27	22 5 49.14	0.821	13 7 5.5	4.23	9 40.8	27	22 1 15.42	0.065	13 27 19.7	0.96	7 38.5
28	22 5 29.74	0.795	13 8 45.2	4.08	9 36.6	28	22 1 18.09	0.128	13 26 54.4	1.14	7 34.6
29	22 5 10.97	0.769	13 10 21.1	3.92	9 32.4	29	22 1 21.55	0.161	13 26 24.8	1.32	7 30.8
30	22 4 52.84	0.742	13 11 53.2	3.76	9 28.1	30	22 1 25.79	0.196	13 25 50.9	1.50	7 26.9
31	22 4 35.36	0.715	13 13 21.4	3.59	9 23.9	31	22 1 30.82	0.226	13 25 12.7	1.68	7 23.0
32	22 4 18.54	0.687	13 14 45.6	3.43	9 19.7	32	22 1 36.62	0.266	13 24 30.3	1.86	7 19.2
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Polar Semidiameter		" 2.1	" 2.1	" 2.1	" 2.0	Polar Semidiameter		" 2.0	" 2.0	" 1.9	" 1.9
Horizontal Parallax		23.3	23.0	22.7	22.3	Horizontal Parallax		22.3	21.7	21.0	20.4

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.				Noon.					Noon.
	h	m	s		s	°	'			"	"	h	m
1	22	1	36.62	0.288	13	24	30.3	1.86	7	19.2
2	22	1	43.20	0.291	13	23	43.8	2.03	7	15.4
3	22	1	50.57	0.323	13	22	53.0	2.21	7	11.6
4	22	1	58.60	0.338	13	21	58.0	2.38	7	7.8
5	22	2	7.58	0.387	13	20	58.9	2.55	7	4.0
6	22	2	17.24	0.419	13	19	55.8	2.72	7	0.2
7	22	2	27.65	0.480	13	18	48.4	2.90	6	56.4
8	22	2	38.82	0.481	13	17	37.0	3.07	6	52.7
9	22	2	50.73	0.512	13	16	21.5	3.24	6	49.0
10	22	3	3.39	0.543	13	15	1.8	3.40	6	45.3
11	22	3	16.78	0.573	13	13	38.2	3.57	6	41.6
12	22	3	30.89	0.604	13	12	10.6	3.73	6	37.9
13	22	3	45.73	0.634	13	10	39.0	3.90	6	34.3
14	22	4	1.30	0.664	13	9	3.6	4.06	6	30.6
15	22	4	17.58	0.693	13	7	24.2	4.23	6	26.9
16	22	4	34.56	0.722	13	5	40.8	4.39	6	23.2
17	22	4	52.25	0.752	13	3	53.6	4.55	6	19.6
18	22	5	10.64	0.781	13	2	2.5	4.71	6	16.0
19	22	5	29.72	0.809	13	0	7.6	4.87	6	12.4
20	22	5	49.49	0.838	12	58	8.9	5.02	6	8.8
21	22	6	9.94	0.867	12	56	6.4	5.18	6	5.2
22	22	6	31.08	0.896	12	54	0.1	5.34	6	1.6
23	22	6	52.88	0.926	12	51	50.0	5.50	5	58.0
24	22	7	15.36	0.950	12	49	36.3	5.65	5	54.4
25	22	7	38.49	0.977	12	47	18.8	5.81	5	50.9
26	22	8	2.27	1.004	12	44	57.8	5.96	5	47.4
27	22	8	26.70	1.031	12	42	33.1	6.11	5	43.9
28	22	8	51.77	1.058	12	40	4.8	6.26	5	40.4
29	22	9	17.47	1.084	12	37	32.9	6.41	5	36.9
30	22	9	43.79	1.110	12	34	57.5	6.55	5	33.4
31	22	10	10.72	1.138	12	32	18.6	6.70	5	29.9
32	22	10	38.25	1.160	12	29	36.2	6.84	5	26.4

DECEMBER.

Day of Month.	Apparent Right Ascension.			Var. of R.A. for 1 Hour.	Apparent Declination.			Var. of Dec. for 1 Hour.	Meridian Passage.	
	Noon.				Noon.					Noon.
	h	m	s		s	°	'			"	h	m
1	22	10	10.72	1.185	12	32	18.6	6.70	5	29.9
2	22	10	38.25	1.160	12	29	36.2	6.84	5	26.4
3	22	11	6.39	1.185	12	26	50.4	6.99	5	22.9
4	22	11	35.12	1.210	12	24	1.1	7.13	5	19.4
5	22	12	4.44	1.234	12	21	8.5	7.27	5	16.0
6	22	12	34.33	1.267	12	18	12.6	7.40	5	12.6
7	22	13	4.78	1.300	12	15	13.3	7.54	5	9.2
8	22	13	35.78	1.303	12	12	10.8	7.67	5	5.8
9	22	14	7.33	1.326	12	9	5.1	7.81	5	2.4
10	22	14	39.42	1.349	12	5	56.1	7.94	4	59.0
11	22	15	12.05	1.371	12	2	44.0	8.07	4	55.6
12	22	15	45.21	1.393	11	59	28.8	8.20	4	52.2
13	22	16	18.88	1.414	11	56	10.4	8.33	4	48.8
14	22	16	53.06	1.436	11	52	48.9	8.46	4	45.4
15	22	17	27.75	1.456	11	49	24.4	8.59	4	42.0
16	22	18	2.93	1.477	11	45	56.8	8.71	4	38.7
17	22	18	38.61	1.497	11	42	26.4	8.84	4	35.4
18	22	19	14.76	1.517	11	38	52.9	8.96	4	32.0
19	22	19	51.40	1.537	11	35	16.4	9.08	4	28.7
20	22	20	28.51	1.556	11	31	37.1	9.20	4	25.4
21	22	21	6.09	1.576	11	27	54.9	9.32	4	22.1
22	22	21	44.12	1.594	11	24	9.8	9.43	4	18.8
23	22	22	22.60	1.613	11	20	21.9	9.55	4	15.5
24	22	23	1.52	1.631	11	16	31.3	9.67	4	12.2
25	22	23	40.88	1.649	11	12	37.9	9.79	4	9.0
26	22	24	20.66	1.667	11	8	41.7	9.90	4	5.7
27	22	25	0.86	1.684	11	4	43.0	10.01	4	2.4
28	22	25	41.48	1.701	11	0	41.5	10.12	3	59.2
29	22	26	22.50	1.717	10	56	37.4	10.23	3	56.0
30	22	27	3.91	1.733	10	52	30.7	10.33	3	52.7
31	22	27	45.71	1.748	10	48	21.6	10.43	3	49.5
32	22	28	27.89	1.763	10	44	9.9	10.52	3	46.3

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 1.9	" 1.8	" 1.8	" 1.7
Horizontal Parallax	20.3	19.7	19.1	18.4

Day of the Month,	1st.	11th.	21st.	31st.
Polar Semidiameter	" 1.7	" 1.7	" 1.6	" 1.6
Horizontal Parallax	18.4	17.9	17.4	17.0

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Light Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Light Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	15 16 58.68	0.921	15 59 47.8	3.25	20 31.2	1	15 26 4.18	0.519	16 28 5.8	1.43	18 38.3
2	15 17 20.67	0.911	16 0 5.2	3.20	20 27.7	2	15 26 16.44	0.503	16 28 39.3	1.38	18 34.5
3	15 17 42.40	0.900	16 1 21.3	3.14	20 24.1	3	15 26 28.32	0.487	16 29 11.3	1.30	18 30.8
4	15 18 3.87	0.889	16 2 36.1	3.09	20 20.5	4	15 26 39.82	0.471	16 29 41.8	1.24	18 27.0
5	15 18 25.08	0.878	16 3 49.5	3.03	20 16.9	5	15 26 50.94	0.455	16 30 10.8	1.18	18 23.3
6	15 18 46.03	0.867	16 5 1.6	2.98	20 13.3	6	15 27 1.67	0.439	16 30 38.3	1.11	18 19.5
7	15 19 6.72	0.856	16 6 12.4	2.92	20 9.8	7	15 27 12.02	0.423	16 31 4.3	1.05	18 15.8
8	15 19 27.14	0.845	16 7 21.9	2.87	20 6.2	8	15 27 21.98	0.407	16 31 23.7	0.99	18 12.0
9	15 19 47.28	0.833	16 8 30.0	2.81	20 2.6	9	15 27 31.54	0.390	16 31 51.6	0.92	18 8.2
10	15 20 7.13	0.821	16 9 36.7	2.75	19 59.0	10	15 27 40.71	0.374	16 32 13.0	0.86	18 4.4
11	15 20 26.69	0.809	16 10 42.0	2.69	19 55.3	11	15 27 49.48	0.357	16 32 32.9	0.80	18 0.6
12	15 20 45.96	0.797	16 11 46.0	2.64	19 51.7	12	15 27 57.86	0.341	16 32 51.3	0.73	17 56.8
13	15 21 4.94	0.785	16 12 48.6	2.58	19 48.1	13	15 28 5.84	0.324	16 33 8.1	0.67	17 53.0
14	15 21 23.62	0.772	16 13 49.8	2.52	19 44.5	14	15 28 13.42	0.307	16 33 23.4	0.61	17 49.2
15	15 21 41.99	0.759	16 14 49.6	2.46	19 40.9	15	15 28 20.59	0.290	16 33 37.2	0.54	17 45.4
16	15 22 0.05	0.746	16 15 48.0	2.40	19 37.2	16	15 28 27.36	0.274	16 33 49.5	0.48	17 41.6
17	15 22 17.80	0.733	16 16 45.0	2.34	19 33.6	17	15 28 33.73	0.257	16 34 0.3	0.42	17 37.7
18	15 22 35.24	0.720	16 17 40.5	2.28	19 29.9	18	15 28 39.69	0.240	16 34 9.6	0.36	17 33.9
19	15 22 52.36	0.707	16 18 34.6	2.22	19 26.3	19	15 28 45.24	0.223	16 34 17.4	0.29	17 30.1
20	15 23 9.16	0.693	16 19 27.3	2.16	19 22.6	20	15 28 50.38	0.206	16 34 23.7	0.23	17 26.2
21	15 23 25.63	0.679	16 20 18.5	2.10	19 18.9	21	15 28 55.11	0.189	16 34 28.5	0.17	17 22.4
22	15 23 41.77	0.666	16 21 8.3	2.06	19 15.3	22	15 28 59.43	0.171	16 34 31.7	0.10	17 18.5
23	15 23 57.58	0.652	16 21 56.7	1.99	19 11.6	23	15 29 3.34	0.154	16 34 33.4	-0.04	17 14.6
24	15 24 13.05	0.638	16 22 43.6	1.92	19 7.9	24	15 29 6.83	0.137	16 34 33.7	+0.02	17 10.7
25	15 24 28.18	0.623	16 23 29.0	1.86	19 4.2	25	15 29 9.91	0.120	16 34 32.5	0.08	17 6.9
26	15 24 42.96	0.609	16 24 13.0	1.80	19 0.5	26	15 29 12.58	0.102	16 34 29.8	0.14	17 3.0
27	15 24 57.39	0.594	16 24 55.5	1.74	18 56.8	27	15 29 14.83	0.085	16 34 25.6	0.21	16 59.1
28	15 25 11.47	0.579	16 25 36.6	1.68	18 53.1	28	15 29 16.66	0.067	16 34 19.9	0.27	16 55.2
29	15 25 25.19	0.564	16 26 16.2	1.62	18 49.4	29	15 29 18.06	0.050	16 34 12.7	0.23	16 51.3
30	15 25 38.55	0.549	16 26 54.3	1.55	18 45.7	30	15 29 19.04	0.032	16 34 4.1	0.29	16 47.4
31	15 25 51.55	0.534	16 27 30.8	1.49	18 42.0	31	15 29 19.60	+0.015	16 33 54.0	0.45	16 43.4
32	15 26 4.18	0.519	16 28 5.8	1.43	18 38.3	32	15 29 19.75	-0.002	16 33 42.5	0.51	16 39.5
Day of the Month,						Day of the Month,					
	1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.	
Polar Semidiameter	" 7.5	" 7.6	" 7.7	" 7.8		Polar Semidiameter	" 7.8	" 7.9	" 8.1	" 8.2	
Horizontal Parallax	0.8	0.8	0.8	0.8		Horizontal Parallax	0.9	0.9	0.9	0.9	

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	15 29 18.06	0-030	16 34 12.7	0-33	16 51.3	1	15 26 41.96	0-451	16 19 7.7	2-01	14 46.6
2	15 29 19.04	0-032	16 34 4.1	0-39	16 47.4	2	15 26 30.97	0-466	16 18 18.8	2-06	14 42.5
3	15 29 19.60	+0-018	16 33 54.0	0-45	16 43.4	3	15 26 19.65	0-478	16 17 28.9	2-10	14 38.4
4	15 29 19.75	-0-002	16 33 42.5	0-51	16 39.5	4	15 26 8.01	0-491	16 16 37.9	2-15	14 34.3
5	15 29 19.49	0-020	16 33 29.5	0-57	16 35.6	5	15 25 56.06	0-504	16 15 45.9	2-19	14 30.2
6	15 29 18.81	0-037	16 33 15.0	0-63	16 31.6	6	15 25 43.81	0-517	16 14 53.0	2-22	14 26.0
7	15 29 17.71	0-054	16 32 59.1	0-69	16 27.6	7	15 25 31.26	0-529	16 13 59.1	2-26	14 21.9
8	15 29 16.20	0-072	16 32 41.7	0-75	16 23.7	8	15 25 18.41	0-541	16 13 4.3	2-30	14 17.7
9	15 29 14.27	0-089	16 32 22.9	0-81	16 19.7	9	15 25 5.27	0-553	16 12 8.6	2-34	14 13.6
10	15 29 11.93	0-106	16 32 2.7	0-87	16 15.7	10	15 24 51.86	0-564	16 11 12.0	2-37	14 9.4
11	15 29 9.19	0-123	16 31 41.1	0-93	16 11.8	11	15 24 38.18	0-576	16 10 14.6	2-41	14 5.3
12	15 29 6.04	0-140	16 31 18.1	0-99	16 7.8	12	15 24 24.23	0-587	16 9 16.4	2-44	14 1.1
13	15 29 2.43	0-157	16 30 53.7	1-04	16 3.8	13	15 24 10.02	0-597	16 8 17.4	2-47	13 56.9
14	15 28 58.52	0-173	16 30 28.0	1-10	15 59.8	14	15 23 55.57	0-607	16 7 17.7	2-50	13 52.7
15	15 28 54.16	0-190	16 30 1.0	1-16	15 55.8	15	15 23 40.88	0-617	16 6 17.2	2-53	13 48.5
16	15 28 49.40	0-206	16 29 32.6	1-21	15 51.8	16	15 23 25.95	0-627	16 5 16.0	2-56	13 44.4
17	15 28 44.25	0-222	16 29 2.8	1-27	15 47.7	17	15 23 10.79	0-636	16 4 14.2	2-59	13 40.2
18	15 28 38.71	0-239	16 28 31.7	1-32	15 43.7	18	15 22 55.41	0-645	16 3 11.7	2-62	13 36.0
19	15 28 32.78	0-255	16 27 59.4	1-37	15 39.7	19	15 22 39.82	0-654	16 2 6.6	2-64	13 31.8
20	15 28 26.47	0-271	16 27 25.8	1-43	15 35.6	20	15 22 24.03	0-662	16 1 4.9	2-66	13 27.6
21	15 28 19.78	0-287	16 26 50.9	1-48	15 31.6	21	15 22 8.04	0-670	16 0 0.7	2-69	13 23.4
22	15 28 12.71	0-302	16 26 14.7	1-53	15 27.5	22	15 21 51.86	0-678	15 58 55.9	2-71	13 19.2
23	15 28 5.26	0-318	16 25 37.3	1-58	15 23.5	23	15 21 35.49	0-686	15 57 50.6	2-73	13 15.0
24	15 27 57.44	0-334	16 24 58.7	1-63	15 19.4	24	15 21 18.95	0-693	15 56 44.9	2-75	13 10.8
25	15 27 49.25	0-349	16 24 18.9	1-68	15 15.3	25	15 21 2.25	0-699	15 55 38.7	2-77	13 6.6
26	15 27 40.70	0-364	16 23 37.9	1-73	15 11.2	26	15 20 45.40	0-706	15 54 32.1	2-78	13 2.4
27	15 27 31.79	0-379	16 22 55.7	1-78	15 7.1	27	15 20 28.40	0-711	15 53 25.1	2-80	12 58.2
28	15 27 22.52	0-394	16 22 12.3	1-83	15 3.1	28	15 20 11.26	0-717	15 52 17.8	2-81	12 53.9
29	15 27 12.89	0-408	16 21 27.8	1-88	14 59.0	29	15 19 53.99	0-722	15 51 10.2	2-82	12 49.7
30	15 27 2.92	0-423	16 20 42.2	1-92	14 54.9	30	15 19 36.60	0-727	15 50 2.3	2-83	12 45.5
31	15 26 52.61	0-437	16 19 55.5	1-97	14 50.8	31	15 19 19.10	0-731	15 48 54.2	2-84	12 41.3
32	15 26 41.96	0-451	16 19 7.7	2-01	14 46.6	32	15 19 1.49	0-736	15 47 45.8	2-85	12 37.1
Day of the Month,						Day of the Month,					
		1st.	11th.	21st.	31st.			1st.	11th.	21st.	31st.
Polar Semidiameter		8.2	8.3	8.4	8.5	Polar Semidiameter		8.5	8.6	8.7	8.8
Horizontal Parallax		0.9	0.9	0.9	0.9	Horizontal Parallax		0.9	1.0	1.0	1.0

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	^h ^m ^s	^s	[°] ['] ["]	["]			^h ^m ^s	^s	[°] ['] ["]	["]	
1	15 19 19.10	0.731	15 48 54.2	2.84	12 41.3	1	15 10 12.80	0.677	15 15 3.2	2.38	10 30.4
2	15 19 1.49	0.736	15 47 45.8	2.85	12 37.1	2	15 9 56.64	0.670	15 14 6.5	2.34	10 26.2
3	15 18 43.78	0.740	15 46 37.3	2.86	12 32.9	3	15 9 40.66	0.662	15 13 10.7	2.30	10 22.0
4	15 18 25.99	0.743	15 45 28.7	2.86	12 28.6	4	15 9 24.87	0.654	15 12 15.9	2.26	10 17.8
5	15 18 8.14	0.745	15 44 20.0	2.86	12 24.4	5	15 9 9.29	0.646	15 11 22.1	2.22	10 13.6
6	15 17 50.23	0.748	15 43 11.2	2.87	12 20.2	6	15 8 53.92	0.638	15 10 29.3	2.18	10 9.4
7	15 17 32.26	0.750	15 42 2.4	2.87	12 15.9	7	15 8 38.77	0.627	15 9 37.5	2.14	10 5.2
8	15 17 14.25	0.751	15 40 53.6	2.86	12 11.7	8	15 8 23.84	0.617	15 8 46.8	2.09	10 1.0
9	15 16 56.20	0.752	15 39 44.9	2.86	12 7.5	9	15 8 9.15	0.607	15 7 57.2	2.04	9 56.9
10	15 16 38.13	0.753	15 38 36.3	2.86	12 3.2	10	15 7 54.70	0.597	15 7 8.7	2.00	9 52.7
11	15 16 20.05	0.754	15 37 27.8	2.85	11 59.0	11	15 7 40.49	0.587	15 6 21.4	1.96	9 48.5
12	15 16 1.96	0.754	15 36 19.5	2.84	11 54.8	12	15 7 26.53	0.576	15 5 35.3	1.90	9 44.4
13	15 15 43.88	0.755	15 35 11.5	2.83	11 50.5	13	15 7 12.83	0.566	15 4 50.4	1.85	9 40.2
14	15 15 25.81	0.752	15 34 3.7	2.82	11 46.3	14	15 6 59.39	0.554	15 4 6.7	1.79	9 36.1
15	15 15 7.76	0.751	15 32 56.1	2.81	11 42.1	15	15 6 46.22	0.543	15 3 24.3	1.74	9 31.9
16	15 14 49.75	0.750	15 31 48.8	2.80	11 37.8	16	15 6 33.32	0.532	15 2 43.2	1.69	9 27.8
17	15 14 31.73	0.748	15 30 41.9	2.78	11 33.6	17	15 6 20.70	0.520	15 2 3.4	1.63	9 23.6
18	15 14 13.85	0.746	15 29 35.4	2.76	11 29.4	18	15 6 8.37	0.508	15 1 26.0	1.57	9 19.5
19	15 13 55.98	0.743	15 28 29.3	2.75	11 25.1	19	15 5 56.33	0.495	15 0 47.9	1.52	9 15.4
20	15 13 38.18	0.740	15 27 23.6	2.73	11 20.9	20	15 5 44.59	0.483	15 0 12.2	1.46	9 11.3
21	15 13 20.45	0.737	15 26 18.4	2.70	11 16.7	21	15 5 33.14	0.471	14 59 37.8	1.40	9 7.1
22	15 13 2.90	0.734	15 25 13.8	2.68	11 12.5	22	15 5 21.99	0.458	14 59 4.8	1.35	9 3.0
23	15 12 45.24	0.730	15 24 9.7	2.66	11 8.3	23	15 5 11.15	0.445	14 58 33.2	1.29	8 58.9
24	15 12 27.78	0.725	15 23 6.2	2.63	11 4.0	24	15 5 0.63	0.432	14 58 3.1	1.22	8 54.8
25	15 12 10.43	0.720	15 22 3.3	2.61	10 59.8	25	15 4 50.43	0.418	14 57 34.5	1.16	8 50.7
26	15 11 53.20	0.715	15 21 1.1	2.58	10 55.6	26	15 4 40.56	0.404	14 57 7.3	1.10	8 46.6
27	15 11 36.10	0.710	15 19 59.5	2.55	10 51.4	27	15 4 31.02	0.391	14 56 41.6	1.04	8 42.5
28	15 11 19.14	0.704	15 18 58.6	2.52	10 47.2	28	15 4 21.81	0.377	14 56 17.4	0.98	8 38.4
29	15 11 2.32	0.698	15 17 58.5	2.49	10 43.0	29	15 4 12.94	0.363	14 55 54.7	0.91	8 34.4
30	15 10 45.65	0.691	15 16 59.2	2.45	10 38.8	30	15 4 4.41	0.348	14 55 33.6	0.85	8 30.3
31	15 10 29.14	0.684	15 16 0.8	2.42	10 34.6	31	15 3 56.23	0.333	14 55 14.1	0.78	8 26.2
32	15 10 12.80	0.677	15 15 3.2	2.38	10 30.4	32	15 3 48.41	0.319	14 54 56.1	0.72	8 22.2
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
8.8						8.7					
8.8						8.6					
8.8						8.6					
8.7						8.5					
1.0						1.0					
1.0						0.9					
1.0						0.9					

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	15 3 56.23	0.233	14 55 14.1	0.79	8 26.2	1	15 2 47.10	0.155	14 58 35.8	1.33	6 23.2
2	15 3 48.41	0.219	14 54 56.1	0.73	8 22.2	2	15 2 51.01	0.171	14 59 8.5	1.40	6 19.4
3	15 3 40.94	0.204	14 54 39.7	0.68	8 18.1	3	15 2 55.30	0.187	14 50 42.8	1.46	6 15.5
4	15 3 33.83	0.200	14 54 24.9	0.66	8 14.1	4	15 2 59.98	0.200	15 0 18.7	1.53	6 11.7
5	15 3 27.08	0.274	14 54 11.7	0.59	8 10.0	5	15 3 5.05	0.219	15 0 56.1	1.59	6 7.8
6	15 3 20.69	0.220	14 54 0.1	0.45	8 6.0	6	15 3 10.51	0.235	15 1 35.1	1.66	6 4.0
7	15 3 14.66	0.244	14 53 50.1	0.36	8 2.0	7	15 3 16.35	0.261	15 2 15.6	1.72	6 0.1
8	15 3 9.00	0.228	14 53 41.7	0.31	7 57.9	8	15 3 22.57	0.267	15 2 57.7	1.79	5 56.3
9	15 3 3.71	0.213	14 53 35.0	0.26	7 53.9	9	15 3 29.17	0.268	15 3 41.3	1.85	5 52.5
10	15 2 58.80	0.197	14 53 29.9	0.18	7 49.9	10	15 3 36.15	0.269	15 4 26.5	1.91	5 48.7
11	15 2 54.26	0.181	14 53 26.5	0.11	7 45.9	11	15 3 43.50	0.314	15 5 13.2	1.97	5 44.9
12	15 2 50.09	0.166	14 53 24.8	0.04	7 41.9	12	15 3 51.22	0.329	15 6 1.3	2.03	5 41.1
13	15 2 46.30	0.180	14 53 24.7	0.03	7 37.9	13	15 3 59.31	0.345	15 6 50.8	2.09	5 37.3
14	15 2 42.89	0.134	14 53 26.2	0.10	7 33.9	14	15 4 7.77	0.360	15 7 41.8	2.15	5 33.5
15	15 2 30.86	0.118	14 53 29.4	0.17	7 29.9	15	15 4 16.60	0.375	15 8 34.3	2.22	5 29.7
16	15 2 37.21	0.102	14 53 34.2	0.24	7 26.0	16	15 4 25.79	0.380	15 9 28.2	2.27	5 25.9
17	15 2 34.94	0.087	14 53 40.7	0.31	7 22.0	17	15 4 35.34	0.406	15 10 23.5	2.33	5 22.2
18	15 2 33.05	0.071	14 53 48.9	0.38	7 18.0	18	15 4 45.25	0.430	15 11 20.2	2.39	5 18.4
19	15 2 31.54	0.055	14 53 58.7	0.44	7 14.1	19	15 4 55.52	0.435	15 12 18.3	2.45	5 14.6
20	15 2 30.42	0.039	14 54 10.1	0.51	7 10.1	20	15 5 6.15	0.450	15 13 17.8	2.51	5 10.9
21	15 2 29.68	0.023	14 54 23.2	0.58	7 6.2	21	15 5 17.14	0.465	15 14 18.6	2.56	5 7.1
22	15 2 29.32	0.007	14 54 38.0	0.65	7 2.2	22	15 5 28.48	0.480	15 15 20.7	2.61	5 3.4
23	15 2 29.35	0.000	14 54 54.5	0.72	6 58.3	23	15 5 40.17	0.495	15 16 24.1	2.67	4 59.7
24	15 2 29.77	0.026	14 55 12.6	0.79	6 54.4	24	15 5 52.22	0.509	15 17 28.9	2.73	4 55.9
25	15 2 30.58	0.043	14 55 32.3	0.86	6 50.5	25	15 6 4.62	0.524	15 18 35.0	2.78	4 52.2
26	15 2 31.77	0.058	14 55 53.6	0.92	6 46.6	26	15 6 17.36	0.538	15 19 42.3	2.83	4 48.5
27	15 2 33.35	0.074	14 56 16.6	0.99	6 42.7	27	15 6 30.44	0.552	15 20 50.9	2.88	4 44.8
28	15 2 35.32	0.089	14 56 41.2	1.06	6 38.8	28	15 6 43.86	0.566	15 22 0.7	2.93	4 41.0
29	15 2 37.68	0.106	14 57 7.4	1.12	6 34.9	29	15 6 57.62	0.580	15 23 11.7	2.98	4 37.3
30	15 2 40.43	0.122	14 57 35.2	1.19	6 31.0	30	15 7 11.72	0.595	15 24 23.9	3.03	4 33.6
31	15 2 43.57	0.139	14 58 4.7	1.26	6 27.1	31	15 7 26.16	0.609	15 25 37.3	3.08	4 30.0
32	15 2 47.10	0.155	14 58 35.8	1.33	6 23.2	32	15 7 40.93	0.622	15 26 51.9	3.13	4 26.3
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
8.5						8.0					
Horizontal Parallax						Horizontal Parallax					
0.9						0.9					

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	15 7 40.93	0.622	15 26 51.9	3.13	4 26.3	1	15 17 20.74	0.968	16 11 28.0	4.17	2 37.9
2	15 7 56.02	0.635	15 28 7.7	3.18	4 22.6	2	15 17 44.08	0.977	16 13 8.4	4.19	2 34.4
3	15 8 11.43	0.649	15 29 24.6	3.23	4 18.9	3	15 18 7.64	0.986	16 14 49.2	4.21	2 30.8
4	15 8 27.16	0.662	15 30 42.6	3.27	4 15.3	4	15 18 31.42	0.995	16 16 30.5	4.23	2 27.3
5	15 8 43.20	0.676	15 32 1.6	3.31	4 11.6	5	15 18 55.41	1.004	16 18 12.2	4.25	2 23.8
6	15 8 59.56	0.688	15 33 21.7	3.35	4 7.9	6	15 19 19.60	1.012	16 19 54.4	4.27	2 20.3
7	15 9 16.23	0.701	15 34 42.8	3.40	4 4.3	7	15 19 43.99	1.020	16 21 37.0	4.28	2 16.7
8	15 9 33.21	0.714	15 36 4.9	3.44	4 0.6	8	15 20 8.58	1.028	16 23 20.0	4.30	2 13.2
9	15 9 50.49	0.726	15 37 28.1	3.49	3 57.0	9	15 20 33.36	1.036	16 25 3.3	4.31	2 9.7
10	15 10 8.07	0.739	15 38 52.3	3.53	3 53.3	10	15 20 58.33	1.044	16 26 46.9	4.33	2 6.2
11	15 10 25.95	0.751	15 40 17.4	3.56	3 49.7	11	15 21 23.49	1.052	16 28 30.9	4.34	2 2.6
12	15 10 44.12	0.763	15 41 43.4	3.60	3 46.1	12	15 21 48.83	1.060	16 30 15.2	4.35	1 59.1
13	15 11 2.58	0.775	15 43 10.3	3.64	3 42.4	13	15 22 14.35	1.067	16 31 59.7	4.36	1 55.6
14	15 11 21.33	0.787	15 44 38.1	3.68	3 38.8	14	15 22 40.05	1.075	16 33 44.5	4.37	1 52.1
15	15 11 40.36	0.799	15 46 6.8	3.71	3 35.2	15	15 23 5.93	1.083	16 35 29.5	4.38	1 48.6
16	15 11 59.66	0.810	15 47 36.4	3.75	3 31.6	16	15 23 31.97	1.088	16 37 14.7	4.39	1 45.1
17	15 12 19.24	0.822	15 49 6.8	3.78	3 28.0	17	15 23 58.17	1.095	16 39 0.1	4.40	1 41.6
18	15 12 39.10	0.833	15 50 38.0	3.82	3 24.4	18	15 24 24.53	1.102	16 40 45.7	4.40	1 38.1
19	15 12 59.24	0.844	15 52 10.0	3.85	3 20.8	19	15 24 51.05	1.108	16 42 31.4	4.41	1 34.6
20	15 13 19.64	0.856	15 53 42.7	3.88	3 17.2	20	15 25 17.72	1.114	16 44 17.3	4.41	1 31.2
21	15 13 40.30	0.866	15 55 16.1	3.91	3 13.6	21	15 25 44.53	1.120	16 46 3.3	4.42	1 27.7
22	15 14 1.22	0.877	15 56 50.3	3.94	3 10.0	22	15 26 11.48	1.126	16 47 49.4	4.42	1 24.2
23	15 14 22.40	0.888	15 58 25.2	3.97	3 6.5	23	15 26 38.58	1.132	16 49 35.5	4.42	1 20.7
24	15 14 43.84	0.899	16 0 0.9	4.00	3 2.9	24	15 27 5.82	1.138	16 51 21.7	4.43	1 17.2
25	15 15 5.54	0.909	16 1 37.3	4.03	2 59.3	25	15 27 33.19	1.143	16 53 7.9	4.43	1 13.7
26	15 15 27.48	0.919	16 3 14.3	4.06	2 55.7	26	15 28 0.69	1.148	16 54 54.2	4.43	1 10.3
27	15 15 49.66	0.929	16 4 51.9	4.08	2 52.2	27	15 28 28.31	1.153	16 56 40.5	4.43	1 6.8
28	15 16 12.08	0.939	16 6 30.1	4.10	2 48.6	28	15 28 56.04	1.158	16 58 26.7	4.43	1 3.3
29	15 16 34.73	0.949	16 8 8.8	4.13	2 45.0	29	15 29 23.88	1.162	17 0 12.9	4.42	0 59.8
30	15 16 57.62	0.959	16 9 48.1	4.15	2 41.5	30	15 29 51.83	1.167	17 1 59.0	4.42	0 56.4
31	15 17 20.74	0.968	16 11 28.0	4.17	2 37.9	31	15 30 19.88	1.171	17 3 45.0	4.41	0 52.9
32	15 17 44.08	0.977	16 13 8.4	4.19	2 34.4	32	15 30 48.03	1.175	17 5 30.9	4.41	0 49.4
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
Horizontal Parallax						Horizontal Parallax					
7.6						7.3					
7.5						7.3					
7.4						7.3					
7.3						7.2					
0.8						0.8					
0.8						0.8					
0.8						0.8					
0.8						0.8					

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Dec. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	15 30 48.03	1.175	17 5 30.9	4.41	0 49.4	1	15 45 16.06	1.208	17 56 7.2	3.92	23 2.5
2	15 31 16.27	1.179	17 7 16.7	4.40	0 46.0	2	15 45 45.02	1.206	17 57 41.0	3.89	22 59.0
3	15 31 44.61	1.182	17 9 2.3	4.40	0 42.5	3	15 46 13.93	1.203	17 59 14.1	3.87	22 55.6
4	15 32 13.02	1.186	17 10 47.7	4.39	0 39.1	4	15 46 42.78	1.201	18 0 46.6	3.84	22 52.1
5	15 32 41.52	1.189	17 12 33.0	4.38	0 35.6	5	15 47 11.56	1.198	18 2 18.4	3.81	22 48.6
6	15 33 10.09	1.192	17 14 18.1	4.37	0 32.1	6	15 47 40.28	1.195	18 3 49.5	3.78	22 45.2
7	15 33 38.73	1.195	17 16 2.9	4.36	0 28.7	7	15 48 8.93	1.192	18 5 19.9	3.75	22 41.7
8	15 34 7.44	1.198	17 17 47.5	4.35	0 25.2	8	15 48 37.51	1.189	18 6 49.6	3.72	22 38.3
9	15 34 36.21	1.200	17 19 31.8	4.34	0 21.8	9	15 49 6.01	1.186	18 8 18.6	3.69	22 34.8
10	15 35 5.04	1.203	17 21 15.8	4.33	0 18.3	10	15 49 34.42	1.183	18 9 46.8	3.66	22 31.3
11	15 35 33.93	1.205	17 22 50.5	4.31	0 14.9	11	15 50 2.74	1.178	18 11 14.3	3.63	22 27.9
12	15 36 2.87	1.207	17 24 42.9	4.30	0 11.4	12	15 50 30.97	1.174	18 12 41.1	3.60	22 24.4
13	15 36 31.85	1.208	17 26 26.0	4.29	0 8.0	13	15 50 59.10	1.170	18 14 7.1	3.57	22 20.9
14	15 37 0.87	1.210	17 28 8.8	4.28	0 4.5	14	15 51 27.13	1.166	18 15 32.3	3.53	22 17.5
15	15 37 29.92	1.211	17 29 51.2	4.26	0 1.1	15	15 51 55.05	1.161	18 16 56.7	3.50	22 14.0
16	15 37 59.01	1.213	17 31 33.2	4.24	23 54.2	16	15 52 22.86	1.156	18 18 20.3	3.47	22 10.5
17	15 38 23.13	1.214	17 33 14.8	4.22	23 50.7	17	15 52 50.56	1.152	18 19 43.1	3.43	22 7.1
18	15 38 57.27	1.215	17 34 56.0	4.21	23 47.3	18	15 53 18.14	1.147	18 21 5.0	3.40	22 3.6
19	15 39 26.43	1.215	17 36 36.8	4.19	23 43.8	19	15 53 45.59	1.141	18 22 26.1	3.36	22 0.1
20	15 39 55.61	1.216	17 38 17.1	4.17	23 40.4	20	15 54 12.91	1.135	18 23 46.4	3.33	21 56.6
21	15 40 24.80	1.216	17 39 57.0	4.15	23 36.9	21	15 54 40.09	1.130	18 25 5.9	3.29	21 53.1
22	15 40 53.99	1.216	17 41 36.4	4.13	23 33.5	22	15 55 7.13	1.124	18 26 24.5	3.26	21 49.6
23	15 41 23.18	1.216	17 43 15.3	4.11	23 30.0	23	15 55 34.02	1.117	18 27 42.2	3.22	21 46.2
24	15 41 52.36	1.215	17 44 53.8	4.09	23 26.6	24	15 56 0.75	1.110	18 28 59.0	3.18	21 42.7
25	15 42 21.53	1.215	17 46 31.8	4.07	23 23.1	25	15 56 27.32	1.104	18 30 14.9	3.14	21 39.2
26	15 42 50.69	1.215	17 48 9.2	4.05	23 19.7	26	15 56 53.73	1.097	18 31 29.9	3.11	21 35.7
27	15 43 19.83	1.214	17 49 46.0	4.02	23 16.3	27	15 57 19.98	1.090	18 32 44.0	3.07	21 32.2
28	15 43 48.94	1.212	17 51 22.2	4.00	23 12.8	28	15 57 46.06	1.083	18 33 57.2	3.03	21 28.7
29	15 44 18.02	1.211	17 52 57.8	3.97	23 9.4	29	15 58 11.96	1.076	18 35 9.5	3.00	21 25.2
30	15 44 47.06	1.209	17 54 32.8	3.95	23 5.9	30	15 58 37.67	1.067	18 36 20.9	2.95	21 21.7
31	15 45 16.06	1.208	17 56 7.2	3.92	23 2.5	31	15 59 3.19	1.059	18 37 31.3	2.91	21 18.2
32	15 45 45.02	1.206	17 57 41.0	3.89	22 59.0	32	15 59 28.51	1.051	18 38 40.7	2.87	21 14.6
Day of the Month,						Day of the Month,					
1st.						1st.					
11th.						11th.					
21st.						21st.					
31st.						31st.					
Polar Semidiameter						Polar Semidiameter					
7.2						7.1					
Horizontal Parallax						Horizontal Parallax					
0.8						0.8					

242 SUN'S COÖRDINATES, 1867.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
Jan. 1	d 1	+1820706	—8864134	—3845719	Mar. 1	d 60	+9343556	—3039220	—1318561
	2	1902385	8833069	3832238		61	9402530	2889476	1233529
	3	2163452	8799236	3817558		62	9459641	2738845	1188251
	4	2333850	8762648	3801685		63	9511870	2587375	1122540
	5	2503521	8723317	3784624		64	9562203	2435113	1056487
	6	+2672410	—8681257	—3766379		65	+9609627	—2282110	—0990109
	7	2340460	8636484	3746956		66	9654130	2128415	0023433
	8	3007615	8589012	3726363		67	9695698	1974077	0856480
	9	3173823	8538856	3704607		68	9734321	1819146	0789270
	10	3339029	8486035	3681697		69	9769988	1663673	0721822
	11	+3503180	—8430570	—3657641		70	+9802695	—1507710	—0654159
	12	3666223	8372482	3632448		71	9832440	1351306	0586303
	13	3823109	8311793	3606125		72	9850221	1194511	0518276
	14	3988791	8248526	3578683		73	9883035	1037374	0450699
	15	4148221	8182706	3550132		74	9903881	0879940	0381792
	16	+4306352	—8114355	—3520481		75	+9921757	—0722255	—0313375
	17	4463137	8043405	3489740		76	9936664	0564266	0244668
	18	4618530	7970150	3457920		77	9948603	0406318	0176221
	19	4772490	7894344	3425030		78	9957576	0248156	0107665
	20	4924973	7816101	3391082		79	9963583	—0089923	—0039007
	21	+5075933	—7735446	—3360086		80	+9966627	+0068335	+0029663
	22	5225328	7652402	3320052		81	9966709	0226578	0098325
	23	5373118	7566702	3282990		82	9963830	0384760	0166959
	24	5519259	7479241	3244911		83	9957992	0542837	0235546
	25	5663704	7389172	3205827		84	9949196	0706764	0304067
	26	+5806406	—7296811	—3165750		85	+9937444	+0858497	+0372504
	27	5947324	7202183	3124689		86	9922738	1015987	0440834
	28	6086413	7105314	3082657		87	9905082	1173188	0509026
	29	6223630	7006233	3039668		88	9884480	1330056	0577091
	30	6358930	6904072	2995735		89	9860937	1486544	0644980
Feb. 1	31	+6492270	—6801562	—2950870	Apr. 1	90	+9834460	+1642605	+0712682
	2	6623606	6696034	2905085		91	9805056	1798189	0780177
	3	6752804	6588420	2858397		92	9772735	1953246	0847443
	4	6880001	6478756	2810823		93	9737508	2107729	0914460
	5	7005152	6367081	2762378		94	9699389	2261587	0981206
	6	+7128036	—6253432	—2713078		95	+9658389	+2414774	+1047661
	7	7248701	6137848	2662038		96	9614525	2567241	1113804
	8	7367117	6020366	2611975		97	9567815	2718941	1170615
	9	7483251	5901028	2560206		98	9518277	2860898	1245077
	10	7597068	5779874	2507650		99	9465032	3019856	1310168
	11	+7708533	—5656045	—2454323		100	+9410803	+3168981	+1374869
	12	7817612	5532284	2400244		101	9352013	3317160	1439160
	13	7924274	5405034	2345428		102	9282283	3464353	1503024
	14	8028493	5277938	2289809		103	9228935	3610518	1566442
	15	8130244	5148337	2233672		104	9162893	3755613	1629397
	16	+8229499	—5017172	—2176765		105	+9094182	+3899597	+1691871
	17	8326231	4884483	2110196		106	9022826	4042433	1753849
	18	8420416	4750311	2060982		107	8948850	4184084	1815313
	19	8512334	4614697	2002139		108	8872276	4324516	1876247
	20	8601063	4477680	1942685		109	8793127	4463694	1936636
	21	+8687475	—4339299	—1882639		110	+8711427	+4601581	+1996465
	22	8771245	4190504	1822021		111	8627202	4738140	2055715
	23	8852350	4058605	1760846		112	8540475	4873332	2114370
	24	8930768	3901675	1699131		113	8451270	5007121	2172416
	25	9006475	3772944	1636895		114	8359611	5139470	2229837
	26	+9079448	—3628353	—1574157		115	+8265522	+5270345	+2286615
	27	9149665	3482641	1510935		116	8169028	5399766	2342735
	28	9217102	3335851	1447248		117	8070155	5527519	2398179
	29	9281739	3188028	1383117		118	7968932	5653724	2452031
	30	9343556	3039220	1318561		119	7865390	5778307	2506975
31	61	+9402530	—2839476	—1253599	31	120	+7759559	+5001223	+2560295
	62	+9458641	—2738845	—1188251		121	+7651469	+6022435	+2612975

SUN'S COÖRDINATES, 1867. 243

Greenwich Mean Noon.				X.	Y.	Z.	Greenwich Mean Noon.				X.	Y.	Z.
May	1	^d 121	+ .7651469	+ .6022435	+ .2612875	July	1	^d 182	— .1613612	+ .9209728	+ .3996659		
	2	122	.7541153	.6141905	.2664700		2	183	.1780481	.9183865	.3984435		
	3	123	.7423647	.6259597	.2715755		3	184	.1946847	.9155401	.3972091		
	4	124	.7313985	.6375474	.2766023		4	185	.2112656	.9124346	.3958623		
	5	125	.7197204	.6489501	.2815490		5	186	.2277856	.9090711	.3944037		
	6	126	+ .7078343	+ .6601643	+ .2864142		6	187	— .2442400	+ .9054508	+ .3928337		
	7	127	.6957441	.6711870	.2911965		7	188	.2606243	.9015749	.3911529		
	8	128	.6834538	.6820152	.2958946		8	189	.2769338	.8974449	.3893618		
	9	129	.6709674	.6926461	.3005071		9	190	.2931637	.8930624	.3874611		
	10	130	.6582892	.7030768	.3050329		10	191	.3093095	.8884290	.3854516		
	11	131	+ .6454232	+ .7133046	+ .3094708		11	192	— .3253668	+ .8835461	+ .3833337		
	12	132	.6323733	.7233269	.3138197		12	193	.3413314	.8784154	.3811079		
	13	133	.6191433	.7331412	.3180784		13	194	.3571993	.8730385	.3787752		
	14	134	.6057373	.7427453	.3222459		14	195	.3729660	.8674172	.3763364		
	15	135	.5921597	.7521369	.3263211		15	196	.3886272	.8615531	.3737921		
16	136	+ .5784144	+ .7613136	+ .3303029	16	197	— .4041790	+ .8554477	+ .3711429				
17	137	.5645053	.7702732	.3341904	17	198	.4196176	.8491026	.3683896				
18	138	.5504361	.7790137	.3379629	18	199	.4349391	.8425195	.3655330				
19	139	.5362106	.7875332	.3416794	19	200	.4501393	.8357000	.3626738				
20	140	.5218327	.7958297	.3452790	20	201	.4652139	.8286457	.3596127				
21	141	+ .5073063	+ .8039009	+ .3487806	21	202	— .4801583	+ .8213581	+ .3563503				
22	142	.4926351	.8117444	.3521831	22	203	.4949687	.8138388	.3530873				
23	143	.4778231	.8193580	.3554857	23	204	.5096410	.8060894	.3497247				
24	144	.4629744	.8267396	.3586877	24	205	.5241710	.7981117	.3462631				
25	145	.4477928	.8338871	.3617880	25	206	.5385544	.7899075	.3427034				
26	146	+ .4325824	+ .8407082	+ .3647856	26	207	— .5527870	+ .7814789	+ .3390464				
27	147	.4172475	.8474707	.3676798	27	208	.5668642	.7728280	.3352931				
28	148	.4017925	.8539027	.3704697	28	209	.5807812	.7639574	.3314446				
29	149	.3862220	.8600921	.3731544	29	210	.5945338	.7548692	.3275019				
30	150	.3705403	.8660369	.3757329	30	211	.6081179	.7455660	.3234661				
June	31	151	+ .3547519	+ .8717351	+ .3782045	Aug.	31	212	— .6215293	+ .7360504	+ .3193384		
	1	152	.3388618	.8771849	.3805685		1	213	.6347638	.7263254	.3151198		
	2	153	.3225748	.8823847	.3828241		2	214	.6478171	.7163937	.3108116		
	3	154	.3067958	.8873329	.3840708		3	215	.6606854	.7062582	.3064152		
	4	155	.2906298	.8920281	.3870079		4	216	.6733650	.6959221	.3019318		
	5	156	+ .2743817	+ .8964691	+ .3889349		5	217	— .6859519	+ .6853886	+ .2973625		
	6	157	.2580565	.9006551	.3907514		6	218	.6981426	.6746612	.2927088		
	7	158	.2416593	.9045851	.3924570		7	219	.7102338	.6637432	.2879723		
	8	159	.2251950	.9082583	.3940513		8	220	.7221220	.6526377	.2831545		
	9	160	.2086685	.9116740	.3955338		9	221	.7338041	.6413480	.2782567		
	10	161	+ .1920845	+ .9148315	+ .3969044		10	222	— .7458771	+ .6298774	+ .2732803		
	11	162	.1754477	.9177304	.3981627		11	223	.7565380	.6182291	.2682265		
	12	163	.1587629	.9203703	.3993086		12	224	.7675839	.6064064	.2630069		
	13	164	.1420348	.9227509	.4003420		13	225	.7784117	.5944127	.2578929		
	14	165	.1252678	.9248721	.4012627		14	226	.7890187	.5822511	.2526159		
15	166	+ .1084665	+ .9267335	+ .4020705	15	227	— .7994018	+ .5699248	+ .2472672				
16	167	.0916353	.9283349	.4027653	16	228	.8095579	.5574368	.2418484				
17	168	.0747785	.9296759	.4033470	17	229	.8194845	.5447902	.2363610				
18	169	.0579006	.9307561	.4038156	18	230	.8291789	.5319886	.2308063				
19	170	.0410060	.9315754	.4041708	19	231	.8386382	.5190350	.2251856				
20	171	+ .0240991	+ .9321336	+ .4044125	20	232	— .8478594	+ .5059324	+ .2195004				
21	172	+ .0071845	.9324303	.4045406	21	233	.8568398	.4926841	.2137522				
22	173	— .0097333	.9324652	.4045550	22	234	.8655759	.4792937	.2079425				
23	174	.0266498	.9322380	.4044557	23	235	.8740649	.4657648	.2020729				
24	175	.0435606	.9317485	.4042426	24	236	.8823041	.4521011	.1961449				
25	176	— .0604608	+ .9309965	+ .4039156	25	237	— .8902906	+ .4383064	+ .1901601				
26	177	.0773454	.9299817	.4034747	26	238	.8980215	.4243846	.1841203				
27	178	.0942034	.9287041	.4029200	27	239	.9054039	.4102394	.1780272				
28	179	.1110479	.9271642	.4022516	28	240	.9127052	.3961748	.1718825				
29	180	.1278560	.9253622	.4014696	29	241	.9196528	.3818952	.1656879				
30	181	— .1446288	+ .9239083	+ .4005740	30	242	— .9263343	+ .3675050	+ .1594453				
31	182	— .1613612	+ .9209728	+ .3996652	31	243	— .9327476	+ .3530087	+ .1531566				

244 SUN'S COÖRDINATES, 1867.

Greenwich Mean Noon.		X.	Y.	Z.	Greenwich Mean Noon.		X.	Y.	Z.
Sept. 1	a				Nov. 1	a			
	244	-.9388906	+ .3384105	+ .1468237		305	-.7750164	-.5680120	- .2464342
	245	.9447614	.3237150	.1404485		306	.7638707	.5802663	.2517251
	3	.9503581	.3089269	.1340330		307	.7524935	.5922231	.2569392
	4	.9556793	.2940506	.1275791		308	.7408887	.6040586	.2620748
	5	.9607234	.2790903	.1210887		309	.7290600	.6157094	.2671303
	6	.9654870	+ .2640506	+ .1145637		310	-.7170109	-.6271724	- .2721042
	7	.9699747	.2489361	.1080060		311	.7047451	.6384441	.2769950
	8	.9741794	.2337171	.1014175		312	.6922605	.6495210	.2818013
	9	.9781021	.2184907	.0948001		313	.6795786	.6604000	.2865218
	10	.9817418	.2031862	.0881557		314	.6666350	.6711781	.2911551
11	254	-.9850977	+ .1878147	+ .0814861	11	315	-.6535893	-.6815522	- .2956907
	12	.9881637	.1723895	.0747930		316	.6402949	.6918190	.3001542
	13	.9909539	.1569149	.0690785		317	.6268055	.7018756	.3045174
	14	.9934523	.1413951	.0613444		318	.6131249	.7117194	.3087880
	15	.9956628	.1258343	.0545925		319	.5992569	.7213471	.3129647
	16	.9975846	+ .1102367	+ .0478247		320	-.5852054	-.7307554	- .3170461
	17	.9992169	.0946065	.0410429		321	.5709741	.7399413	.3210307
	18	1.0005588	.0789479	.0342490		322	.5565667	.7489017	.3249173
	19	1.0016394	.0632652	.0274448		323	.5419871	.7576332	.3287046
	20	1.0023678	.0475627	.0206321		324	.5272395	.7661326	.3323913
21	264	-1.0028332	+ .0318446	+ .0138127	21	325	-.5123285	-.7743964	- .3359761
	22	1.0030047	.0161150	.0069886		326	.4972586	.7824230	.3394577
	23	1.0028818	+ .0003797	+ .0001619		327	.4820341	.7902083	.3428349
	24	1.0024639	-.0153584	-.0066653		328	.4666598	.7977498	.3461065
	25	1.0017506	.0310925	.0134910		329	.4511405	.8050451	.3492713
	26	.9997416	-.0468184	-.0203132		330	-.4354810	-.8120916	- .3523282
	27	.9994366	.0625310	.0271206		331	.4196865	.8188866	.3552761
	28	.9978357	.0782252	.0339381		332	.4037022	.8254271	.3581140
	29	.9959392	.0938959	.0407365		333	.3877132	.8317111	.3608408
	30	.9937475	.1095334	.0475227		334	.3715448	.8377369	.3634556
Oct. 1	274	-.9912613	-.1251479	-.0542946	Dec. 1	335	-.3552624	-.8435028	- .3659576
	275	.9884811	.1407195	.0610502		336	.3388715	.8490064	.3683461
	3	.9854078	.1562484	.0677874		337	.3223772	.8542472	.3716204
	4	.9823424	.1717297	.0745041		338	.3057846	.8592228	.3747739
	5	.9783855	.1871585	.0811083		339	.2890089	.8639324	.3778220
	6	.9744389	-.2025302	-.0878679		340	-.2723251	-.8683744	- .3767518
	7	.9702038	.2178402	.0945109		341	.2554685	.8725487	.3785630
	8	.9656315	.2330844	.1011253		342	.2385342	.8764531	.3802572
	9	.9608735	.2482584	.1077093		343	.2215274	.8800868	.3818330
	10	.9557812	.2633577	.1142610		344	.2044529	.8834488	.3832927
11	284	-.9504060	-.2783779	-.1207783	11	345	-.1873156	-.8865381	- .3846329
	12	.9447493	.2933148	.1272596		346	.1701204	.8893540	.3868542
	13	.9383124	.3081645	.1337030		347	.1528723	.8918055	.3889063
	14	.9325968	.3229230	.1401066		348	.1355763	.8941615	.3897930
	15	.9261038	.3375865	.1464637		349	.1182374	.8961510	.3898016
	16	.9193349	-.3521505	-.1527873		350	-.1008607	-.8976633	- .3895438
	17	.9122916	.3666102	.1590607		351	.0834514	.8992576	.3901653
	18	.9049755	.3809612	.1652869		352	.0660146	.9004530	.3906659
	19	.8973882	.3951994	.1714640		353	.0485555	.9013287	.3910451
	20	.8895315	.4093206	.1775901		354	-.0310797	.9019240	.3913027
21	294	-.8814070	-.4233203	-.1836634	21	355	-.0135026	-.9022384	- .3914385
	22	.8730165	.4373191	.1896920		356	+ .0039002	.9022712	.3914524
	23	.8643622	.4509374	.1956439		357	.0213930	.9020220	.3913443
	24	.8554462	.4645455	.2015473		358	.0388800	.9014908	.3911140
	25	.8462709	.4780140	.2073901		359	.0563554	.9006777	.3907615
	26	.8368389	-.4913384	-.2131704		360	+ .0738132	.8995828	.3902668
	27	.8271529	.5051411	.2188863		361	.0912477	.8982067	.3896902
	28	.8172156	.5175368	.2245358		362	.1086531	.8965407	.3889719
	29	.8070301	.5304021	.2301171		363	.1260238	.8946123	.3881321
	30	.7965995	.5431058	.2356285		364	.1433540	.8923953	.3871710
31	304	-.7859271	-.5556438	-.2410681	31	365	+ .1606383	.8898998	.3860890
	305	-.7750164	-.5680120	- .2464342		366	+ .1778712	-.8871268	- .3848865

MOON'S LONGITUDE, &c., 1867. 245

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		FEBRUARY.		MARCH.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	231° 23' 34.5	+4° 5' 8.2	275° 25' 12.5	+5° 2' 46.2	283° 26' 24.1	+4° 57' 13.3
1.5	237 18 24.3	4 21 52.5	281 27 6.1	4 54 50.4	289 29 46.8	4 44 14.9
2.0	243 13 12.5	4 35 46.7	287 31 18.0	4 43 32.2	295 36 2.5	4 27 57.3
2.5	249 8 21.7	4 46 42.4	293 38 0.8	4 28 54.5	301 45 33.3	4 8 25.6
3.0	255 4 11.2	4 54 32.8	299 47 24.2	4 11 2.5	307 58 38.4	3 45 47.0
3.5	261 0 57.3	4 59 11.5	305 59 35.0	3 50 3.8	314 15 32.8	3 20 11.2
4.0	266 58 53.6	5 0 34.5	312 14 37.8	3 26 8.7	320 36 27.9	2 51 51.0
4.5	272 58 11.4	4 58 33.5	318 32 35.1	2 59 30.1	327 1 30.8	2 21 1.9
5.0	278 58 59.7	4 53 22.4	324 53 28.2	2 30 23.9	333 30 44.5	1 48 3.1
5.5	285 1 25.7	4 44 46.7	331 17 17.2	1 59 8.5	340 4 8.1	1 13 17.1
6.0	291 5 36.0	4 32 54.2	337 44 2.0	1 26 5.1	346 41 36.6	0 37 9.6
6.5	297 11 36.0	4 17 49.6	344 13 42.3	0 51 37.3	353 23 1.7	+0 0 9.4
7.0	303 19 31.6	3 59 39.8	350 46 18.4	+0 16 10.8	0 8 11.6	-0 37 12.0
7.5	309 29 20.1	3 38 34.0	357 21 51.0	-0 19 46.7	6 56 52.0	1 14 21.5
8.0	315 41 35.8	3 14 43.5	4 0 21.8	0 55 46.3	13 48 46.3	1 50 44.4
8.5	321 56 0.7	2 48 21.7	10 41 53.3	1 31 17.8	20 43 36.3	2 25 45.5
9.0	328 12 54.5	2 19 44.1	17 26 28.3	2 5 50.5	27 41 2.7	2 58 50.4
9.5	334 32 30.1	1 49 8.3	24 14 9.8	2 38 53.4	34 40 45.4	3 29 25.5
10.0	340 55 2.7	1 16 53.8	31 5 0.7	3 9 55.8	41 42 24.1	3 56 59.7
10.5	347 20 49.0	0 43 21.8	37 59 2.8	3 38 27.5	48 45 38.5	4 21 4.5
11.0	353 50 7.9	+0 8 55.6	44 56 15.9	4 3 59.6	65 50 8.6	4 41 15.2
11.5	0 23 19.2	-0 26 0.1	51 56 37.5	4 26 4.9	62 55 34.9	4 57 10.9
12.0	7 0 42.9	1 0 58.4	59 0 1.7	4 44 18.4	70 1 38.3	5 8 35.4
12.5	13 42 39.0	1 35 31.3	66 6 18.5	4 58 18.3	77 8 0.3	5 15 17.2
13.0	20 29 25.6	2 9 8.8	73 15 12.7	5 7 46.4	84 14 22.8	5 17 9.8
13.5	27 21 17.8	2 41 19.9	80 26 23.9	5 12 28.7	91 20 27.9	5 14 11.7
14.0	34 18 26.3	3 11 32.4	87 39 26.5	5 12 16.5	98 25 57.7	5 6 26.7
14.5	41 20 55.9	3 39 13.8	94 53 48.7	5 7 6.3	105 30 34.7	4 54 3.2
15.0	48 28 43.5	4 3 51.4	102 8 54.4	4 57 1.3	112 34 1.0	4 37 14.6
15.5	55 41 37.3	4 24 54.1	109 24 2.6	4 42 10.7	119 35 58.7	4 16 18.9
16.0	62 59 15.0	4 41 52.8	116 38 29.8	4 22 50.2	126 36 9.9	3 51 38.2
16.5	70 21 3.5	4 54 21.8	123 51 30.8	3 59 21.5	133 34 16.4	3 23 38.0
17.0	77 46 19.0	5 2 0.7	131 2 20.4	3 32 11.7	140 30 0.6	2 52 47.3
17.5	85 14 7.7	5 4 34.6	138 10 15.1	3 1 52.4	147 23 5.0	2 19 37.2
18.0	92 43 27.3	5 1 56.6	145 14 35.0	2 28 58.2	154 13 12.6	1 44 40.6
18.5	100 13 9.5	4 54 7.4	152 14 44.7	1 54 6.1	161 0 7.8	1 8 31.1
19.0	107 42 2.6	4 41 16.2	159 10 14.5	1 17 53.5	167 43 36.5	-0 31 42.6
19.5	115 8 54.9	4 23 40.4	166 0 41.4	0 40 57.5	174 23 26.3	+0 5 12.0
20.0	122 32 37.7	4 1 44.4	172 45 49.6	-0 3 53.4	180 59 27.5	0 41 40.9
20.5	129 52 8.5	3 35 59.0	179 25 30.1	+0 32 45.7	187 31 33.0	1 17 14.6
21.0	137 6 33.4	3 6 50.1	185 59 41.6	1 8 29.8	193 59 39.2	1 51 26.1
21.5	144 15 8.7	2 35 22.4	192 28 29.1	1 42 52.5	200 23 45.5	2 23 51.1
22.0	151 17 21.9	2 1 47.5	198 52 3.7	2 15 30.5	206 43 55.3	2 54 8.5
22.5	158 12 52.1	1 26 52.6	205 10 42.2	2 46 4.2	213 0 15.5	3 22 0.3
23.0	165 1 29.6	0 51 14.2	211 24 46.0	3 14 16.8	219 12 56.8	3 47 11.4
23.5	171 43 15.2	-0 15 25.9	217 34 40.8	3 39 54.8	225 22 13.5	4 9 29.5
24.0	178 18 18.9	+0 20 1.6	223 40 55.5	4 2 46.8	231 28 23.3	4 28 45.1
24.5	184 46 58.9	0 54 41.1	229 44 1.8	4 22 43.9	237 31 47.2	4 44 50.7
25.0	191 9 39.8	1 28 8.9	235 44 33.0	4 39 38.8	243 32 49.4	4 57 40.9
25.5	197 26 51.3	2 0 4.3	241 43 4.4	4 53 25.7	249 31 56.6	5 7 12.0
26.0	203 39 6.8	2 30 9.8	247 40 11.7	5 3 59.7	255 29 37.9	5 13 21.4
26.5	209 47 2.6	2 58 10.2	253 36 30.8	5 11 16.9	261 26 24.6	5 16 8.0
27.0	215 51 16.8	3 23 52.4	259 32 37.5	5 15 14.4	267 22 49.5	5 15 31.3
27.5	221 52 28.0	3 47 5.5	265 29 7.1	5 15 49.8	273 19 26.4	5 11 32.1
28.0	227 51 15.2	4 7 39.5	271 26 33.5	5 13 1.7	279 16 50.1	5 4 11.7
28.5	233 48 16.5	4 25 26.0	277 25 29.1	5 6 49.4	285 15 35.9	4 53 32.1
29.0	239 44 8.7	4 40 17.4	283 26 24.1	4 57 13.3	291 16 19.1	4 39 36.6
29.5	245 39 26.9	4 52 6.8	289 29 46.8	4 44 14.9	297 19 34.6	4 22 28.9
30.0	251 34 44.1	5 0 48.3	295 36 2.5	4 27 57.3	303 25 55.8	4 2 14.8
30.5	257 30 30.9	5 6 16.8	301 45 33.3	4 8 25.6	309 35 54.5	3 39 1.2
31.0	263 27 15.1	5 8 28.0	307 58 38.4	3 45 47.0	315 50 0.2	3 12 57.0
31.5	269 25 21.7	+5 7 18.5	314 15 32.8	+3 20 11.2	322 8 39.4	+2 44 14.0

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FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	APRIL.		MAY.		JUNE.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	325 32 14.6	+2 13 6.6	3 0 31.1	-0 56 24.7	54 23 53.0	-4 31 48.3
1.5	335 1 4.1	1 39 52.2	9 55 36.5	1 32 34.1	61 56 12.9	4 46 20.5
2.0	341 35 20.3	1 4 51.7	16 57 20.2	2 7 51.3	69 31 52.7	4 55 56.2
2.5	348 15 10.1	+0 28 30.1	24 5 23.9	2 41 38.0	77 9 31.8	5 0 18.5
3.0	355 0 33.2	-0 8 44.3	31 19 18.0	3 13 14.4	84 47 45.5	4 59 19.7
3.5	1 51 22.5	0 46 19.6	38 38 21.6	3 42 1.1	92 25 7.9	4 53 1.3
4.0	8 47 23.4	1 23 40.8	46 1 43.3	4 7 20.4	100 0 17.4	4 41 34.1
4.5	15 48 13.9	2 0 10.3	53 28 23.3	4 28 38.2	107 31 58.8	4 25 17.1
5.0	22 53 25.0	2 35 9.8	60 57 15.0	4 45 25.7	114 59 7.6	4 4 36.6
5.5	30 2 21.8	3 8 0.5	68 27 8.1	4 57 20.9	122 20 51.3	3 40 4.3
6.0	37 14 24.0	3 38 5.1	75 56 51.6	5 4 9.3	129 36 30.7	3 12 15.4
6.5	44 28 47.6	4 4 48.8	83 25 16.7	5 5 45.0	136 45 40.3	2 41 46.7
7.0	51 44 46.0	4 27 40.8	90 51 19.9	5 2 10.1	143 48 7.1	2 9 15.6
7.5	59 1 32.2	4 46 15.2	98 14 5.6	4 53 34.6	150 43 49.4	1 35 18.4
8.0	66 18 20.4	5 0 12.1	105 32 47.5	4 40 14.9	157 32 55.4	1 0 29.6
8.5	73 34 27.1	5 9 17.9	112 46 49.6	4 22 33.3	164 15 40.5	-0 25 21.4
9.0	80 49 12.9	5 13 25.5	119 55 46.6	4 0 56.1	170 52 26.4	+0 9 36.4
9.5	88 2 3.0	5 12 34.3	126 59 23.0	3 35 52.5	177 23 38.6	0 43 57.1
10.0	95 12 28.5	5 6 49.8	133 57 33.0	3 7 53.7	183 49 45.1	1 17 16.4
10.5	102 20 5.9	4 56 22.8	140 50 18.4	2 37 31.5	190 11 15.3	1 49 12.7
11.0	109 24 37.4	4 41 23.9	147 37 47.5	2 5 17.6	196 28 38.7	2 19 26.7
11.5	116 25 50.5	4 22 27.8	154 20 13.8	1 31 43.1	202 42 24.1	2 47 41.1
12.0	123 23 37.5	3 59 42.4	160 57 54.2	0 57 18.1	208 52 59.1	3 13 40.7
12.5	130 17 54.8	3 33 38.6	167 31 7.8	-0 22 31.3	215 0 49.5	3 37 12.2
13.0	137 8 41.9	3 4 43.7	174 0 14.9	+0 12 9.8	221 6 18.5	3 58 3.7
13.5	143 56 0.5	2 33 26.7	180 25 35.0	0 46 19.6	227 9 47.5	4 16 5.0
14.0	150 39 54.3	2 0 17.7	186 47 30.7	1 19 34.1	233 11 35.1	4 31 7.7
14.5	157 20 27.8	1 25 46.7	193 6 18.1	1 51 30.8	239 11 57.7	4 43 4.9
15.0	163 57 46.2	0 50 24.1	199 22 15.1	2 21 40.1	245 11 9.9	4 51 51.4
15.5	170 31 54.4	-0 14 30.6	205 35 37.2	2 50 10.3	251 9 24.3	4 57 23.5
16.0	177 2 56.8	+0 20 57.8	211 46 37.6	3 16 17.5	257 6 52.3	4 59 39.2
16.5	183 30 57.6	0 56 0.4	217 55 28.0	3 39 55.6	263 3 44.4	4 58 38.4
17.0	189 56 0.1	1 30 2.0	224 2 18.7	4 0 51.5	269 0 10.8	4 54 22.3
17.5	196 18 7.4	2 2 38.1	230 7 18.7	4 18 54.2	274 56 21.9	4 46 54.0
18.0	202 37 22.5	2 33 26.3	236 10 36.1	4 33 54.8	280 52 28.4	4 36 18.1
18.5	208 53 48.5	3 2 6.6	242 12 19.0	4 45 46.4	286 48 42.3	4 22 41.0
19.0	215 7 20.1	3 28 21.6	248 12 35.6	4 54 23.9	292 45 17.1	4 6 10.4
19.5	221 18 29.0	3 51 56.1	254 11 35.1	4 59 44.0	298 42 28.1	3 46 55.3
20.0	227 26 54.5	4 12 37.6	260 9 27.6	5 1 45.6	304 40 32.6	3 25 6.1
20.5	233 32 53.6	4 30 16.2	266 6 25.2	5 0 29.2	310 39 50.5	3 0 54.6
21.0	239 36 36.6	4 44 44.2	272 2 41.8	4 55 57.0	316 40 44.2	2 34 33.6
21.5	245 38 15.9	4 55 56.1	277 58 33.6	4 48 12.8	322 43 38.6	2 6 17.2
22.0	251 38 6.8	5 3 48.5	283 54 19.4	4 37 21.4	328 49 1.2	1 36 20.6
22.5	257 36 27.0	5 8 19.6	289 50 20.5	4 23 28.9	334 57 21.9	1 5 0.5
23.0	263 33 37.2	5 9 20.1	295 47 1.3	4 6 42.6	341 9 11.9	+0 32 34.9
23.5	269 30 0.7	5 7 18.4	301 44 48.8	3 47 10.7	347 25 4.0	-0 0 36.7
24.0	275 26 3.7	5 1 49.5	307 44 12.6	3 25 2.6	353 45 31.8	0 34 13.2
24.5	281 22 14.6	4 53 5.8	313 45 44.7	3 0 28.6	0 11 8.5	1 7 51.3
25.0	287 19 4.4	4 41 11.6	319 49 59.3	2 33 40.2	6 42 26.5	1 41 6.3
25.5	293 17 6.0	4 26 11.9	325 57 32.1	2 4 50.4	13 19 55.4	2 13 30.9
26.0	299 16 53.9	4 8 12.7	332 9 0.0	1 34 13.7	20 4 0.5	2 44 36.1
26.5	305 19 4.0	3 47 21.0	338 25 0.0	1 2 6.4	26 55 1.2	3 13 50.9
27.0	311 24 12.9	3 23 45.2	344 46 8.8	+0 28 46.8	33 53 9.6	3 40 42.8
27.5	317 32 57.4	2 57 34.8	351 13 1.3	-0 5 24.1	40 58 27.9	4 4 38.7
28.0	323 45 53.7	2 29 1.4	357 46 9.8	0 40 2.8	48 10 46.9	4 25 8.6
28.5	330 3 36.8	1 58 18.6	4 26 2.1	1 14 42.8	55 29 44.5	4 41 31.8
29.0	336 26 39.4	1 25 42.5	11 13 0.2	1 48 54.6	62 54 44.7	4 53 28.7
29.5	342 55 30.7	0 51 32.0	18 7 18.0	2 22 5.8	70 24 58.1	5 0 32.5
30.0	349 30 35.2	+0 16 9.5	25 8 59.4	2 53 41.4	77 59 21.9	5 2 25.4
30.5	356 12 11.5	-0 19 59.2	32 17 57.0	3 23 4.6	85 36 42.9	4 58 57.8
31.0	3 0 31.1	0 56 24.7	39 33 50.3	3 49 37.7	93 15 39.6	4 50 9.0
31.5	9 55 36.5	-1 32 34.1	46 56 5.1	-4 12 43.9	100 54 46.3	-4 36 7.8

MOON'S LONGITUDE, &c., 1867. 247

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		AUGUST.		SEPTEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	93 15 30.6	-0 50 9.0	146 43 56.4	-1 36 9.4	196 36 48.0	+2 49 54.6
1.5	100 54 46.3	4 36 7.8	153 58 23.8	0 57 57.7	203 13 1.9	3 19 36.3
2.0	108 32 37.0	4 17 12.2	161 6 49.1	-0 19 20.4	209 43 37.2	3 46 16.3
2.5	116 7 49.4	3 53 48.6	168 8 47.6	+0 19 2.2	216 8 47.5	4 9 42.2
3.0	123 39 8.4	3 26 30.5	175 4 5.8	0 56 33.4	222 28 51.3	4 29 44.9
3.5	131 5 29.4	2 55 56.1	181 52 40.2	1 32 41.0	228 44 11.6	4 46 18.8
4.0	138 26 0.4	2 22 46.7	188 34 36.2	2 6 57.3	234 55 15.0	4 59 20.6
4.5	145 40 2.3	1 47 44.7	195 10 7.3	2 38 59.3	241 2 31.0	5 8 49.3
5.0	152 47 9.7	1 11 31.6	201 39 33.0	3 8 28.2	247 6 31.1	5 14 45.5
5.5	159 47 10.0	-0 34 46.7	208 3 18.0	3 35 9.3	253 7 48.5	5 17 10.9
6.0	166 40 2.3	+0 1 53.7	214 21 50.6	3 58 50.8	259 6 57.1	5 16 8.3
6.5	173 25 55.4	0 37 57.0	220 35 42.0	4 19 24.0	265 4 31.5	5 11 41.5
7.0	180 5 6.3	1 12 54.6	226 45 25.1	4 36 42.5	271 1 6.0	5 3 55.1
7.5	186 37 58.2	1 46 21.7	232 51 33.6	4 50 41.9	276 57 14.3	4 52 54.3
8.0	193 4 58.8	2 17 57.0	238 54 41.3	5 1 19.4	282 53 29.4	4 38 45.2
8.5	199 26 38.8	2 47 22.5	244 55 21.5	5 8 33.3	288 50 22.7	4 21 34.7
9.0	205 43 30.7	3 14 23.1	250 54 6.8	5 12 23.2	294 48 24.2	4 1 30.9
9.5	211 56 7.9	3 38 46.3	256 51 28.5	5 12 49.8	300 48 1.9	3 38 43.2
10.0	218 5 3.4	4 0 21.5	262 47 56.1	5 9 54.5	306 49 41.6	3 13 22.3
10.5	224 10 49.5	4 19 0.1	268 43 57.3	5 3 39.9	312 53 46.6	2 45 40.8
11.0	230 13 56.9	4 34 35.3	274 39 57.7	4 54 9.8	319 0 37.3	2 15 53.2
11.5	236 14 54.7	4 47 1.4	280 36 20.9	4 41 28.9	325 10 31.6	1 44 15.9
12.0	242 14 9.6	4 56 14.1	286 33 28.5	4 25 43.5	331 23 43.9	1 11 7.7
12.5	248 12 6.4	5 2 10.5	292 31 39.6	4 7 1.2	337 40 26.1	0 36 49.6
13.0	254 9 7.1	5 4 49.0	298 31 11.5	3 45 31.1	344 0 46.4	+0 1 44.9
13.5	260 5 31.8	5 4 9.3	304 32 19.7	3 21 24.1	350 24 50.4	-0 33 41.1
14.0	266 1 38.2	5 0 12.2	310 35 17.8	2 54 53.0	356 52 40.2	1 9 1.5
14.5	271 57 42.3	4 53 0.1	316 40 18.2	2 26 12.6	3 24 15.3	1 43 47.5
15.0	277 53 58.3	4 49 37.0	322 47 31.8	1 55 39.4	9 59 32.4	2 17 29.6
15.5	283 50 39.0	4 29 8.4	328 57 8.5	1 23 31.8	16 38 26.0	2 49 37.9
16.0	289 47 56.6	4 12 41.4	335 9 17.8	0 50 10.3	23 20 48.4	3 19 42.2
16.5	295 46 2.4	3 53 24.8	341 24 8.6	+0 15 56.7	30 6 30.4	3 47 13.7
17.0	301 45 8.0	3 31 29.0	347 41 49.9	-0 18 45.5	36 55 21.2	4 11 44.6
17.5	307 45 25.1	3 7 6.2	354 2 30.8	0 53 31.5	43 47 8.7	4 32 49.5
18.0	313 47 6.2	2 40 29.9	0 26 20.4	1 27 55.6	50 41 40.4	4 50 5.4
18.5	319 50 24.6	2 11 55.2	6 53 28.5	2 1 31.1	57 38 42.7	5 3 12.5
19.0	325 55 35.5	1 41 39.0	13 24 4.8	2 33 50.8	64 38 1.8	5 11 55.0
19.5	332 2 55.3	1 9 50.2	19 58 19.0	3 4 27.3	71 39 23.2	5 16 0.9
20.0	338 12 42.4	0 37 15.2	26 36 20.7	3 32 53.3	78 42 32.2	5 15 22.8
20.5	344 25 16.9	+0 3 47.6	33 18 18.3	3 58 42.0	85 47 13.6	5 9 57.9
21.0	350 41 0.8	-0 30 1.8	40 4 19.1	4 21 27.5	92 53 11.5	4 50 48.4
21.5	357 0 17.3	1 3 50.0	46 54 28.1	4 40 45.0	100 0 9.1	4 45 1.6
22.0	3 23 30.6	1 37 12.8	53 48 47.8	4 56 11.3	107 7 48.5	4 25 49.7
22.5	9 51 5.0	2 9 44.9	60 47 17.2	5 7 25.9	114 15 50.5	4 2 30.0
23.0	16 23 24.7	2 40 59.9	67 49 51.2	5 14 11.1	121 23 54.9	3 35 24.4
23.5	23 0 53.2	3 10 30.5	74 56 19.4	5 16 12.8	128 31 40.1	3 4 59.4
24.0	29 43 47.9	3 37 48.6	82 6 26.1	5 13 21.4	135 38 42.8	2 31 45.5
24.5	36 32 28.3	4 2 25.8	89 19 49.2	5 5 32.6	142 44 38.5	1 56 16.4
25.0	43 27 4.9	4 23 53.6	96 36 0.2	4 52 47.7	149 49 1.7	1 19 8.1
25.5	50 27 42.6	4 41 44.1	103 54 24.7	4 35 14.6	156 51 26.1	0 40 58.5
26.0	57 34 18.2	4 55 31.1	111 14 22.3	4 13 7.6	163 51 25.4	-0 2 25.7
26.5	64 46 39.1	5 4 50.7	118 35 8.6	3 46 48.0	170 48 33.9	+0 35 52.2
27.0	72 4 22.3	5 9 22.9	125 55 55.0	3 16 43.3	177 42 26.7	1 13 19.0
27.5	79 26 53.7	5 8 52.6	133 15 51.3	2 43 26.7	184 32 41.1	1 49 21.0
28.0	86 53 28.5	5 3 11.0	140 34 6.6	2 7 36.0	191 18 57.4	2 23 27.5
28.5	94 23 11.7	4 52 16.7	147 49 51.4	1 29 52.1	198 0 59.0	2 55 11.8
29.0	101 55 0.2	4 36 16.5	155 2 19.7	0 50 57.8	204 38 33.9	3 24 11.2
29.5	109 27 44.6	4 15 25.8	162 10 49.4	-0 11 35.8	211 11 34.3	3 50 7.2
30.0	117 0 12.3	3 50 8.1	169 14 44.8	+0 27 32.6	217 39 57.3	4 12 45.8
30.5	124 31 10.2	3 20 54.4	176 13 36.3	1 5 48.5	224 3 45.2	4 31 56.7
31.0	131 59 28.4	2 48 21.9	183 7 2.3	1 42 37.1	230 23 5.4	4 47 33.4
31.5	139 24 2.5	-2 13 12.3	189 54 48.4	+2 17 27.8	236 38 10.1	+4 59 32.6

248 MOON'S LONGITUDE, &c., 1867.

FOR GREENWICH MEAN NOON AND MIDNIGHT.						
Day of Month.	OCTOBER.		NOVEMBER.		DECEMBER.	
	True Longitude.	Latitude.	True Longitude.	Latitude.	True Longitude.	Latitude.
1.0	230 23 5.4	+4 47 33.4	274 56 38.5	+4 42 39.5	306 46 58.8	+2 43 10.2
1.5	236 38 10.1	4 59 32.6	280 53 17.1	4 29 5.6	312 41 15.3	2 16 7.9
2.0	242 49 15.8	5 7 53.4	286 48 45.3	4 12 30.9	318 36 35.2	1 47 30.7
2.5	248 56 43.3	5 12 37.4	292 43 35.8	3 53 32.8	324 33 35.9	1 17 33.5
3.0	255 0 57.1	5 13 47.8	298 38 24.1	3 31 55.0	330 32 57.1	0 46 32.0
3.5	261 2 25.0	5 11 29.2	304 33 47.4	3 7 57.8	336 35 19.5	+0 14 42.8
4.0	267 1 37.6	5 5 47.4	310 30 25.0	2 41 53.1	342 41 25.0	-0 17 36.4
4.5	272 59 7.4	4 56 48.9	316 28 56.8	2 13 53.7	348 51 55.0	0 50 6.5
5.0	278 55 29.3	4 44 40.8	322 30 3.2	1 44 13.2	355 7 30.3	1 22 26.7
5.5	284 51 19.0	4 29 30.9	328 34 24.6	1 13 6.5	1 28 49.4	1 54 14.2
6.0	290 47 13.3	4 11 27.7	334 42 40.3	0 40 50.1	7 56 27.4	2 25 4.3
6.5	296 43 49.4	3 50 40.2	340 55 27.3	+0 7 42.4	14 30 54.5	2 54 30.4
7.0	302 41 44.1	3 27 18.2	347 13 20.3	-0 25 56.3	21 12 34.3	3 22 3.6
7.5	308 41 33.6	3 1 32.7	353 36 49.7	0 59 43.3	28 1 42.1	3 47 13.8
8.0	314 43 52.7	2 33 35.8	0 6 20.9	1 33 13.2	34 58 22.9	4 9 29.8
8.5	320 49 14.4	2 3 41.2	6 42 13.0	2 5 58.4	42 2 30.0	4 28 20.4
9.0	326 58 9.3	1 32 4.5	13 24 37.3	2 37 29.1	49 13 44.1	4 43 15.7
9.5	333 11 4.7	0 59 3.3	20 13 36.5	3 7 13.4	56 31 32.2	4 53 48.4
10.0	339 28 24.2	+0 24 57.4	27 9 3.4	3 34 38.4	63 55 7.8	4 59 35.7
10.5	345 50 27.2	-0 9 50.7	34 10 40.3	3 59 11.2	71 23 32.0	5 0 20.5
11.0	352 17 27.8	0 44 56.1	41 17 59.2	4 20 19.4	78 55 35.6	4 55 53.3
11.5	358 49 35.0	1 19 51.6	48 30 21.8	4 37 33.5	86 30 2.0	4 46 13.0
12.0	5 26 51.1	1 54 7.7	55 47 0.2	4 50 27.5	94 5 30.2	4 31 27.9
12.5	12 9 12.5	2 27 13.2	63 6 59.1	4 58 40.7	101 40 38.9	4 11 54.5
13.0	18 56 28.7	2 58 36.0	70 29 17.7	5 1 58.7	109 14 10.1	3 47 58.1
13.5	25 48 22.9	3 27 43.4	77 52 52.8	5 0 14.6	116 44 52.7	3 20 10.7
14.0	32 44 32.0	3 54 3.7	85 16 41.0	4 53 28.7	124 11 45.2	2 49 9.1
14.5	39 44 27.7	4 17 6.9	92 39 41.5	4 41 49.3	131 33 57.2	2 15 33.8
15.0	46 47 37.3	4 36 25.4	100 0 59.4	4 25 31.5	138 50 50.8	1 40 6.3
15.5	53 53 24.6	4 51 35.9	107 19 47.0	4 4 56.6	146 2 0.3	1 3 27.9
16.0	61 1 12.1	5 2 19.4	114 35 24.7	3 40 31.2	153 7 11.8	-0 26 18.3
16.5	68 10 21.4	5 8 22.2	121 47 22.2	3 12 45.6	160 6 21.6	+0 10 45.3
17.0	75 20 15.4	5 9 36.8	128 55 19.0	2 42 12.7	166 59 34.8	0 47 9.1
17.5	82 30 19.3	5 6 1.0	135 59 3.0	2 9 26.8	173 47 3.6	1 22 22.7
18.0	89 40 1.5	4 57 38.7	142 58 29.7	1 35 2.4	180 29 4.9	1 55 59.2
18.5	96 48 54.7	4 44 39.3	149 53 40.4	0 59 34.1	187 5 59.6	2 27 35.3
19.0	103 56 35.4	4 27 17.1	156 44 41.9	-0 23 35.2	193 38 10.3	2 56 51.1
19.5	111 2 45.0	4 5 51.4	163 31 43.9	+0 12 22.4	200 6 0.6	3 23 29.5
20.0	118 7 9.0	3 40 44.9	170 14 58.7	0 47 48.4	206 29 53.6	3 47 16.2
20.5	125 9 36.4	3 12 24.1	176 54 39.3	1 22 14.4	212 50 11.7	4 7 59.6
21.0	132 9 59.5	2 41 17.6	183 30 58.4	1 55 14.4	219 7 15.7	4 25 30.3
21.5	139 8 12.7	2 7 56.5	190 4 8.2	2 26 24.5	225 21 24.5	4 39 41.1
22.0	146 4 12.1	1 32 53.2	196 34 19.2	2 55 23.1	231 32 55.1	4 50 27.1
22.5	152 57 54.4	0 56 40.7	203 1 40.4	3 21 51.0	237 42 2.3	4 57 45.4
23.0	159 49 16.7	-0 19 52.6	209 26 18.9	3 45 31.7	243 48 58.8	5 1 34.9
23.5	166 38 15.4	+0 16 57.8	215 48 19.8	4 6 11.1	249 53 56.0	5 1 56.5
24.0	173 24 45.8	0 53 18.1	222 7 46.4	4 23 37.9	255 57 3.2	4 58 53.1
24.5	180 8 42.3	1 28 37.2	228 24 40.4	4 37 43.4	261 58 29.3	4 52 29.5
25.0	186 49 58.2	2 2 26.0	234 39 3.2	4 48 21.8	267 58 22.5	4 42 52.1
25.5	193 28 25.8	2 34 17.8	240 50 56.0	4 55 29.8	273 56 51.0	4 30 9.0
26.0	200 3 56.6	3 3 48.3	247 0 20.2	4 59 6.7	279 54 3.7	4 14 29.9
26.5	206 36 21.8	3 30 36.6	253 7 18.5	4 59 14.2	285 50 10.4	3 56 5.9
27.0	213 5 33.5	3 54 25.3	259 11 55.0	4 55 56.2	291 45 22.4	3 35 9.3
27.5	219 31 24.7	4 15 0.4	265 14 16.2	4 49 18.7	297 39 52.9	3 11 53.6
28.0	225 53 50.5	4 32 11.2	271 14 31.2	4 39 29.5	303 33 57.6	2 46 33.2
28.5	232 12 48.0	4 45 50.7	277 12 51.9	4 26 37.6	309 27 53.9	2 19 23.2
29.0	238 28 17.8	4 55 54.8	283 9 33.8	4 10 53.3	315 22 3.2	1 50 39.4
29.5	244 40 23.6	5 2 22.6	289 4 55.7	3 52 28.0	321 16 48.8	1 20 38.3
30.0	250 49 13.3	5 5 15.7	294 59 19.5	3 31 33.8	327 12 37.3	0 49 36.6
30.5	256 54 58.2	5 4 37.8	300 53 10.9	3 8 23.5	333 9 57.7	+0 17 51.8
31.0	262 57 53.9	5 0 34.3	306 46 58.8	2 43 10.2	339 9 22.2	-0 14 18.0
31.5	268 58 19.6	+4 53 12.1	312 41 15.3	+2 16 7.9	345 11 24.7	-0 46 34.0

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

250 OBLIQUITY OF THE ECLIPTIC, &c.

Mean Noon.	Apparent Obliquity.	Equation of Equinoxes.		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Parallax.	
1867.	23° 27'						
Jan. 0	13.26	—0.36	—0.02	0.00	—20.80	8.72	177° 25.7
10	13.35	0.10	0.01	1.38	20.79	8.72	176 53.9
20	13.50	0.05	0.00	2.75	20.77	8.72	176 22.1
30	13.67	0.05	0.00	4.13	20.74	8.71	175 50.4
Feb. 9	13.86	0.10	0.01	5.50	20.71	8.69	175 18.6
19	14.04	0.40	0.03	6.88	20.67	8.67	174 46.8
Mar. 1	14.18	0.85	0.05	8.26	20.63	8.65	174 15.0
11	14.27	1.39	0.08	9.63	20.57	8.63	173 43.3
21	14.30	1.98	0.12	11.01	20.51	8.61	173 11.5
31	14.26	2.57	0.16	12.38	20.45	8.58	172 39.8
Apr. 10	14.17	3.10	0.19	13.76	20.39	8.56	172 8.0
20	14.02	3.55	0.22	15.14	20.34	8.53	171 36.2
30	13.85	3.86	0.24	16.51	20.29	8.51	171 4.4
May 10	13.67	4.04	0.25	17.89	20.24	8.49	170 32.7
20	13.50	4.08	0.25	19.26	20.19	8.47	170 0.9
30	13.35	4.00	0.25	20.64	20.16	8.46	169 29.1
June 9	13.26	3.83	0.24	22.02	20.13	8.45	168 57.3
19	13.22	3.61	0.22	23.39	20.11	8.44	168 25.5
29	13.24	3.38	0.21	24.77	20.11	8.44	167 53.8
July 9	13.32	3.18	0.20	26.14	20.10	8.44	167 22.0
19	13.46	3.06	0.19	27.52	20.12	8.44	166 50.2
29	13.62	3.05	0.19	28.89	20.14	8.45	166 18.4
Aug. 8	13.81	3.16	0.19	30.27	20.17	8.46	165 46.7
18	14.00	3.42	0.21	31.65	20.20	8.48	165 14.9
28	14.17	3.80	0.23	33.02	20.24	8.50	164 43.2
Sept. 7	14.30	4.29	0.26	34.40	20.29	8.52	164 11.4
17	14.38	4.85	0.30	35.77	20.35	8.54	163 39.6
27	14.39	5.45	0.33	37.15	20.41	8.56	163 7.8
Oct. 7	14.35	6.01	0.37	38.53	20.47	8.59	162 36.1
17	14.24	6.51	0.40	39.90	20.53	8.61	162 4.3
27	14.10	6.90	0.42	41.28	20.59	8.64	161 32.5
Nov. 6	13.92	7.13	0.44	42.65	20.64	8.66	161 0.7
16	13.75	7.21	0.44	44.03	20.69	8.68	160 29.0
26	13.60	7.14	0.44	45.41	20.73	8.70	159 57.2
Dec. 6	13.49	6.93	0.43	46.78	20.76	8.71	159 25.4
16	13.43	6.64	0.41	48.16	20.78	8.72	158 53.7
26	13.45	6.31	0.39	49.53	20.79	8.72	158 21.9
36	13.53	—6.01	—0.37	50.91	—20.78	8.72	157 50.1
Mean Obliquity, 1867.0, 23° 27' 23.095 Precession for 1867.5, 50.2564 Log. Precession in a Sidereal Day, 9.13741 Log. Precession in a Solar Day, 9.13860							Daily Motion. 3.177

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Jan. 1	-7.3974	+0.9921	-0.5600	+1.3019	Mar. 1	+9.1705	+0.9460	-1.2493	+0.8190
2	+6.9345	0.9917	0.6056	1.3003	2	9.1756	0.9453	1.2518	0.7960
3	7.6170	0.9913	0.6394	1.2985	3	9.1805	0.9448	1.2542	0.7717
4	7.8692	0.9909	0.6704	1.2967	4	9.1853	0.9442	1.2564	0.7457
5	8.0265	0.9904	0.6994	1.2946	5	9.1901	0.9436	1.2585	0.7180
6	+8.1411	+0.9899	-0.7264	+1.2924	6	+9.1947	+0.9431	-1.2604	+0.6882
7	8.2315	0.9894	0.7516	1.2900	7	9.1992	0.9427	1.2622	0.6562
8	8.3058	0.9889	0.7754	1.2875	8	9.2037	0.9422	1.2638	0.6215
9	8.3630	0.9883	0.7978	1.2848	9	9.2081	0.9418	1.2653	0.5835
10	8.4241	0.9877	0.8189	1.2820	10	9.2124	0.9414	1.2667	0.5418
11	+8.4726	+0.9871	-0.8390	+1.2790	11	+9.2166	+0.9410	-1.2680	+0.4955
12	8.5159	0.9865	0.8580	1.2757	12	9.2208	0.9407	1.2691	0.4437
13	8.5550	0.9858	0.8760	1.2726	13	9.2249	0.9404	1.2701	0.3847
14	8.5905	0.9852	0.8934	1.2691	14	9.2289	0.9401	1.2709	0.3164
15	8.6230	0.9844	0.9098	1.2655	15	9.2329	0.9399	1.2716	0.2350
16	+8.6531	+0.9837	-0.9255	+1.2617	16	+9.2369	+0.9397	-1.2722	+0.1351
17	8.6810	0.9830	0.9405	1.2577	17	9.2408	0.9395	1.2726	0.0048
18	8.7069	0.9822	0.9549	1.2536	18	9.2447	0.9394	1.2729	0.6169
19	8.7312	0.9814	0.9686	1.2493	19	9.2485	0.9393	1.2731	+0.4800
20	8.7540	0.9806	0.9819	1.2448	20	9.2523	0.9392	1.2731	-8.7160
21	+8.7755	+0.9798	-0.9946	+1.2401	21	+9.2560	+0.9392	-1.2731	-9.6085
22	8.7958	0.9790	1.0063	1.2352	22	9.2597	0.9392	1.2728	9.8802
23	8.8149	0.9781	1.0185	1.2302	23	9.2634	0.9392	1.2725	0.0461
24	8.8331	0.9773	1.0298	1.2249	24	9.2671	0.9393	1.2720	0.1658
25	8.8503	0.9764	1.0407	1.2194	25	9.2708	0.9394	1.2714	0.2594
26	+8.8666	+0.9755	-1.0512	+1.2138	26	+9.2744	+0.9395	-1.2707	-0.3361
27	8.8822	0.9746	1.0612	1.2079	27	9.2780	0.9396	1.2698	0.4011
28	8.8971	0.9737	1.0700	1.2018	28	9.2816	0.9396	1.2688	0.4576
29	8.9113	0.9728	1.0803	1.1955	29	9.2852	0.9400	1.2677	0.5073
30	8.9250	0.9718	1.0893	1.1889	30	9.2888	0.9403	1.2665	0.5518
31	+8.9382	+0.9709	-1.0981	+1.1821	31	+9.2924	+0.9405	-1.2650	-0.5922
Feb. 1	8.9507	0.9699	1.1065	1.1751	Apr. 1	9.2959	0.9408	1.2635	0.6289
2	8.9627	0.9690	1.1146	1.1678	2	9.2995	0.9412	1.2619	0.6626
3	8.9742	0.9681	1.1224	1.1603	3	9.3030	0.9416	1.2601	0.6937
4	8.9853	0.9671	1.1300	1.1525	4	9.3066	0.9419	1.2582	0.7226
5	+8.9960	+0.9662	-1.1373	+1.1444	5	+9.3101	+0.9424	-1.2561	-0.7495
6	9.0063	0.9652	1.1443	1.1360	6	9.3137	0.9428	1.2539	0.7748
7	9.0162	0.9643	1.1510	1.1273	7	9.3173	0.9433	1.2515	0.7985
8	9.0258	0.9633	1.1576	1.1183	8	9.3209	0.9438	1.2491	0.8209
9	9.0351	0.9624	1.1639	1.1090	9	9.3244	0.9443	1.2465	0.8421
10	+9.0440	+0.9614	-1.1700	+1.0993	10	+9.3280	+0.9448	-1.2437	-0.8621
11	9.0526	0.9605	1.1759	1.0893	11	9.3316	0.9454	1.2408	0.8811
12	9.0610	0.9596	1.1816	1.0789	12	9.3352	0.9460	1.2377	0.8992
13	9.0690	0.9586	1.1870	1.0682	13	9.3389	0.9466	1.2346	0.9164
14	9.0768	0.9577	1.1922	1.0560	14	9.3425	0.9472	1.2312	0.9328
15	+9.0844	+0.9568	-1.1973	+1.0454	15	+9.3461	+0.9478	-1.2277	-0.9485
16	9.0917	0.9560	1.2021	1.0333	16	9.3498	0.9485	1.2241	0.9635
17	9.0989	0.9551	1.2063	1.0207	17	9.3535	0.9492	1.2203	0.9779
18	9.1058	0.9542	1.2113	1.0077	18	9.3572	0.9499	1.2163	0.9917
19	9.1125	0.9534	1.2156	0.9941	19	9.3609	0.9506	1.2122	1.0050
20	+9.1190	+0.9525	-1.2197	+0.9800	20	+9.3646	+0.9513	-1.2079	-1.0177
21	9.1254	0.9517	1.2236	0.9653	21	9.3683	0.9520	1.2034	1.0299
22	9.1315	0.9509	1.2274	0.9499	22	9.3721	0.9528	1.1988	1.0418
23	9.1375	0.9502	1.2310	0.9338	23	9.3758	0.9535	1.1940	1.0531
24	9.1434	0.9494	1.2344	0.9169	24	9.3796	0.9543	1.1890	1.0640
25	+9.1491	+0.9487	-1.2377	+0.8993	25	+9.3834	+0.9551	-1.1838	-1.0745
26	9.1546	0.9480	1.2408	0.8808	26	9.3872	0.9559	1.1785	1.0847
27	9.1601	0.9473	1.2438	0.8613	27	9.3910	0.9567	1.1729	1.0944
28	9.1654	0.9466	1.2466	0.8407	28	9.3949	0.9575	1.1672	1.1030
29	9.1705	0.9460	1.2493	0.8190	29	9.3987	0.9583	1.1613	1.1130
30	+9.1756	+0.9453	-1.2518	+0.7960	30	+9.4026	+0.9591	-1.1552	-1.1218
31	+9.1805	+0.9448	-1.2542	+0.7717	31	+9.4065	+0.9599	-1.1488	-1.1303

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
May 1	+9.4065	+0.9599	-1.1488	-1.1303	July 1	+9.6369	+0.9825	+0.5045	-1.3042
2	9.4104	0.9607	1.1422	1.1385	2	9.6401	0.9822	0.5443	1.3029
3	9.4143	0.9615	1.1354	1.1465	3	9.6432	0.9818	0.5807	1.3015
4	9.4182	0.9623	1.1284	1.1542	4	9.6463	0.9813	0.6142	1.2999
5	9.4221	0.9631	1.1211	1.1616	5	9.6493	0.9809	0.6451	1.2982
6	+9.4260	+0.9639	-1.1136	-1.1687	6	+9.6524	+0.9804	+0.6739	-1.2964
7	9.4300	0.9647	1.1059	1.1756	7	9.6554	0.9799	0.7008	1.2945
8	9.4340	0.9655	1.0979	1.1823	8	9.6583	0.9794	0.7260	1.2924
9	9.4379	0.9663	1.0895	1.1888	9	9.6612	0.9788	0.7497	1.2902
10	9.4419	0.9671	1.0810	1.1950	10	9.6641	0.9783	0.7721	1.2878
11	+9.4459	+0.9679	-1.0720	-1.2010	11	+9.6670	+0.9777	+0.7933	-1.2854
12	9.4499	0.9687	1.0629	1.2069	12	9.6698	0.9770	0.8133	1.2828
13	9.4539	0.9694	1.0534	1.2125	13	9.6726	0.9764	0.8324	1.2800
14	9.4579	0.9702	1.0435	1.2179	14	9.6753	0.9757	0.8505	1.2771
15	9.4619	0.9709	1.0333	1.2231	15	9.6780	0.9750	0.8679	1.2741
16	+9.4659	+0.9717	-1.0228	-1.2282	16	+9.6807	+0.9743	+0.8844	-1.2709
17	9.4699	0.9724	1.0119	1.2333	17	9.6833	0.9736	0.9002	1.2676
18	9.4739	0.9731	1.0006	1.2377	18	9.6859	0.9729	0.9154	1.2642
19	9.4779	0.9738	0.9888	1.2423	19	9.6885	0.9721	0.9298	1.2616
20	9.4819	0.9744	0.9766	1.2466	20	9.6910	0.9713	0.9438	1.2568
21	+9.4859	+0.9751	-0.9639	-1.2508	21	+9.6935	+0.9705	+0.9571	-1.2529
22	9.4899	0.9758	0.9507	1.2548	22	9.6960	0.9697	0.9700	1.2488
23	9.4938	0.9764	0.9370	1.2587	23	9.6984	0.9688	0.9824	1.2446
24	9.4978	0.9770	0.9227	1.2624	24	9.7008	0.9680	0.9943	1.2402
25	9.5018	0.9776	0.9078	1.2659	25	9.7032	0.9671	1.0058	1.2356
26	+9.5058	+0.9782	-0.8923	-1.2693	26	+9.7055	+0.9662	+1.0169	-1.2309
27	9.5097	0.9787	0.8761	1.2726	27	9.7078	0.9653	1.0276	1.2260
28	9.5137	0.9792	0.8590	1.2755	28	9.7101	0.9644	1.0379	1.2209
29	9.5177	0.9797	0.8412	1.2786	29	9.7123	0.9635	1.0479	1.2156
30	9.5216	0.9802	0.8225	1.2815	30	9.7145	0.9626	1.0574	1.2102
31	+9.5255	+0.9807	-0.8028	-1.2841	31	+9.7167	+0.9617	+1.0667	-1.2045
June 1	9.5294	0.9812	0.7821	1.2867	Aug. 1	9.7188	0.9607	1.0757	1.1986
2	9.5333	0.9816	0.7601	1.2891	2	9.7209	0.9597	1.0844	1.1925
3	9.5372	0.9820	0.7370	1.2914	3	9.7230	0.9588	1.0928	1.1863
4	9.5411	0.9824	0.7124	1.2935	4	9.7250	0.9578	1.1010	1.1797
5	+9.5449	+0.9827	-0.6962	-1.2955	5	+9.7270	+0.9568	+1.1088	-1.1730
6	9.5487	0.9830	0.6582	1.2974	6	9.7290	0.9559	1.1164	1.1661
7	9.5526	0.9833	0.6232	1.2991	7	9.7309	0.9549	1.1238	1.1595
8	9.5564	0.9836	0.5857	1.3008	8	9.7328	0.9539	1.1309	1.1515
9	9.5602	0.9839	0.5605	1.3023	9	9.7347	0.9529	1.1378	1.1438
10	+9.5639	+0.9841	-0.5222	-1.3036	10	+9.7366	+0.9519	+1.1444	-1.1358
11	9.5677	0.9843	0.4800	1.3049	11	9.7384	0.9509	1.1509	1.1276
12	9.5714	0.9845	0.4331	1.3060	12	9.7402	0.9499	1.1571	1.1191
13	9.5751	0.9846	0.3804	1.3070	13	9.7419	0.9489	1.1631	1.1103
14	9.5787	0.9847	0.3204	1.3079	14	9.7436	0.9479	1.1689	1.1012
15	+9.5824	+0.9848	-0.2504	-1.3086	15	+9.7453	+0.9470	+1.1745	-1.0917
16	9.5861	0.9849	0.1670	1.3092	16	9.7470	0.9460	1.1799	1.0819
17	9.5896	0.9849	0.0637	1.3098	17	9.7487	0.9450	1.1852	1.0718
18	9.5932	0.9849	9.9279	1.3101	18	9.7503	0.9441	1.1903	1.0613
19	9.5967	0.9849	9.7284	1.3104	19	9.7519	0.9431	1.1952	1.0504
20	+9.6002	+0.9849	-9.3464	-1.3106	20	+9.7534	+0.9422	+1.1999	-1.0391
21	9.6037	0.9848	+8.9542	1.3106	21	9.7550	0.9413	1.2044	1.0273
22	9.6072	0.9847	9.6031	1.3105	22	9.7565	0.9403	1.2088	1.0151
23	9.6106	0.9846	9.8537	1.3103	23	9.7580	0.9394	1.2130	1.0024
24	9.6140	0.9844	0.0112	1.3099	24	9.7595	0.9385	1.2170	0.9892
25	+9.6174	+0.9842	+0.1261	-1.3095	25	+9.7609	+0.9377	+1.2209	-0.9754
26	9.6207	0.9840	0.2170	1.3089	26	9.7623	0.9368	1.2247	0.9611
27	9.6240	0.9838	0.2920	1.3082	27	9.7638	0.9360	1.2282	0.9462
28	9.6273	0.9835	0.3558	1.3074	28	9.7651	0.9351	1.2317	0.9305
29	9.6306	0.9832	0.4115	1.3064	29	9.7665	0.9343	1.2350	0.9142
30	+9.6338	+0.9829	+0.4605	-1.3055	30	+9.7679	+0.9335	+1.2381	-0.8970
31	+9.6369	+0.9825	+0.5045	-1.3042	31	+9.7692	+0.9327	+1.2411	-0.8790

FOR WASHINGTON MEAN MIDNIGHT.

LOGARITHMS FOR CORRECTING THE PLACES OF THE FIXED STARS.

Date.	A.	B.	C.	D.	Date.	A.	B.	C.	D.
Sept. 1	+0.7705	+0.9320	+1.2440	-0.8601	Nov. 1	+9.8428	+0.9397	+1.1616	+1.1126
2	9.7718	0.9313	1.2467	0.8402	2	9.8443	0.9406	1.1552	1.1217
3	9.7730	0.9306	1.2493	0.8192	3	9.8457	0.9414	1.1486	1.1305
4	9.7743	0.9299	1.2517	0.7970	4	9.8472	0.9422	1.1418	1.1390
5	9.7755	0.9292	1.2541	0.7735	5	9.8487	0.9430	1.1348	1.1472
6	+0.7768	+0.9286	+1.2562	-0.7485	6	+9.8502	+0.9438	+1.1275	+1.1553
7	9.7780	0.9280	1.2582	0.7217	7	9.8517	0.9446	1.1199	1.1628
8	9.7792	0.9274	1.2601	0.6931	8	9.8532	0.9454	1.1120	1.1702
9	9.7804	0.9268	1.2619	0.6624	9	9.8547	0.9463	1.1039	1.1773
10	9.7815	0.9263	1.2635	0.6291	10	9.8563	0.9471	1.0955	1.1842
11	+0.7827	+0.9258	+1.2650	-0.5928	11	+9.8579	+0.9479	+1.0867	+1.1909
12	9.7839	0.9254	1.2664	0.5533	12	9.8594	0.9487	1.0777	1.1973
13	9.7850	0.9249	1.2676	0.5095	13	9.8610	0.9495	1.0683	1.2035
14	9.7861	0.9245	1.2687	0.4606	14	9.8626	0.9502	1.0585	1.2095
15	9.7873	0.9242	1.2697	0.4054	15	9.8642	0.9510	1.0484	1.2153
16	+0.7884	+0.9238	+1.2706	-0.3418	16	+9.8658	+0.9518	+1.0379	+1.2208
17	9.7895	0.9235	1.2713	0.2672	17	9.8675	0.9525	1.0271	1.2262
18	9.7906	0.9232	1.2719	0.1767	18	9.8691	0.9532	1.0157	1.2314
19	9.7917	0.9230	1.2724	0.0622	19	9.8708	0.9539	1.0039	1.2363
20	9.7928	0.9227	1.2728	9.9058	20	9.8725	0.9546	0.9918	1.2412
21	+0.7939	+0.9226	+1.2730	-9.6590	21	+9.8741	+0.9553	+0.9790	+1.2458
22	9.7950	0.9224	1.2731	-9.0253	22	9.8758	0.9560	0.9657	1.2502
23	9.7961	0.9223	1.2731	+9.3856	23	9.8775	0.9566	0.9519	1.2545
24	9.7971	0.9222	1.2729	9.7731	24	9.8792	0.9573	0.9375	1.2585
25	9.7982	0.9221	1.2727	9.9745	25	9.8809	0.9579	0.9224	1.2624
26	+0.7993	+0.9221	+1.2722	+0.1116	26	+9.8827	+0.9585	+0.9067	+1.2662
27	9.8004	0.9221	1.2717	0.2156	27	9.8844	0.9590	0.8901	1.2698
28	9.8015	0.9222	1.2711	0.2993	28	9.8861	0.9596	0.8729	1.2732
29	9.8026	0.9223	1.2703	0.3694	29	9.8879	0.9601	0.8547	1.2764
30	9.8037	0.9224	1.2693	0.4298	30	9.8896	0.9606	0.8356	1.2795
Oct. 1	+0.8047	+0.9225	+1.2683	+0.4826	Dec. 1	+9.8914	+0.9611	+0.8154	+1.2825
2	9.8058	0.9227	1.2671	0.5206	2	9.8932	0.9615	0.7941	1.2852
3	9.8069	0.9229	1.2658	0.5718	3	9.8949	0.9620	0.7717	1.2878
4	9.8080	0.9232	1.2643	0.6103	4	9.8967	0.9623	0.7478	1.2904
5	9.8091	0.9234	1.2627	0.6455	5	9.8985	0.9627	0.7224	1.2927
6	+0.8103	+0.9237	+1.2610	+0.6780	6	+9.9002	+0.9630	+0.6952	+1.2949
7	9.8114	0.9241	1.2591	0.7081	7	9.9020	0.9634	0.6661	1.2969
8	9.8125	0.9244	1.2572	0.7362	8	9.9038	0.9636	0.6347	1.2988
9	9.8136	0.9248	1.2550	0.7624	9	9.9056	0.9639	0.6008	1.3005
10	9.8148	0.9252	1.2527	0.7870	10	9.9074	0.9641	0.5637	1.3022
11	+0.8159	+0.9257	+1.2503	+0.8102	11	+9.9091	+0.9643	+0.5231	+1.3036
12	9.8171	0.9262	1.2477	0.8321	12	9.9109	0.9645	0.4781	1.3049
13	9.8183	0.9266	1.2450	0.8529	13	9.9127	0.9646	0.4278	1.3061
14	9.8194	0.9272	1.2421	0.8726	14	9.9145	0.9647	0.3707	1.3072
15	9.8206	0.9277	1.2391	0.8912	15	9.9163	0.9647	0.3047	1.3081
16	+0.8218	+0.9283	+1.2359	+0.9091	16	+9.9180	+0.9648	+0.2266	+1.3088
17	9.8230	0.9289	1.2326	0.9260	17	9.9198	0.9648	0.1313	1.3094
18	9.8243	0.9295	1.2291	0.9423	18	9.9216	0.9647	0.0090	1.3099
19	9.8255	0.9301	1.2255	0.9579	19	9.9233	0.9647	9.8376	1.3103
20	9.8268	0.9308	1.2216	0.9728	20	9.9251	0.9646	9.5490	1.3105
21	+0.8280	+0.9315	+1.2177	+0.9872	21	+9.9268	+0.9644	+8.3222	+1.3106
22	9.8293	0.9321	1.2135	1.0008	22	9.9285	0.9643	-9.4955	1.3105
23	9.8306	0.9328	1.2092	1.0140	23	9.9303	0.9641	9.8102	1.3103
24	9.8319	0.9336	1.2047	1.0267	24	9.9320	0.9638	9.9908	1.3100
25	9.8332	0.9343	1.2000	1.0389	25	9.9337	0.9636	0.1179	1.3095
26	+0.8346	+0.9350	+1.1961	+1.0505	26	+9.9354	+0.9633	-0.2162	+1.3089
27	9.8359	0.9358	1.1900	1.0618	27	9.9371	0.9629	0.2960	1.3082
28	9.8373	0.9366	1.1847	1.0727	28	9.9388	0.9626	0.3634	1.3073
29	9.8386	0.9373	1.1793	1.0832	29	9.9405	0.9622	0.4214	1.3062
30	9.8400	0.9381	1.1735	1.0934	30	9.9421	0.9617	0.4726	1.3051
31	+0.8414	+0.9389	+1.1676	+1.1032	31	+9.9438	+0.9613	-0.5183	+1.3038
32	+0.8428	+0.9397	+1.1616	+1.1126	32	+9.9454	+0.9608	-0.5594	+1.3023

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	α .	δ .	Log g .	G .	Log h .	H .	Log i .	τ .
Jan. 1	0.00	-0.11	0.9921	90 17	1.3092	349 31	-0.2064	0.0038
2	0.00	+0.04	0.9917	89 54	1.3090	348 35	0.2430	0.0065
3	0.00	0.19	0.9913	89 31	1.3087	347 38	0.2767	0.0093
4	0.00	0.34	0.9909	89 8	1.3085	346 42	0.3078	0.0120
5	0.00	0.49	0.9905	88 45	1.3081	345 45	0.3367	0.0149
6	0.00	+0.64	0.9901	88 22	1.3078	344 49	-0.3638	0.0175
7	0.00	0.79	0.9897	88 0	1.3075	343 51	0.3889	0.0202
8	0.00	0.93	0.9893	87 37	1.3071	342 54	0.4127	0.0230
9	0.00	1.08	0.9888	87 14	1.3067	341 57	0.4351	0.0257
10	0.00	1.22	0.9884	86 52	1.3063	341 0	0.4562	0.0285
11	0.00	+1.37	0.9880	86 29	1.3059	340 3	-0.4763	0.0312
12	0.00	1.51	0.9875	86 7	1.3055	339 5	0.4953	0.0339
13	0.00	1.65	0.9870	85 45	1.3050	338 8	0.5134	0.0367
14	0.00	1.80	0.9866	85 23	1.3045	337 10	0.5307	0.0394
15	0.00	1.93	0.9861	85 1	1.3040	336 13	0.5471	0.0421
16	0.00	+2.07	0.9856	84 30	1.3035	335 15	-0.5628	0.0449
17	0.00	2.21	0.9851	84 17	1.3030	334 17	0.5779	0.0476
18	0.00	2.35	0.9846	83 56	1.3025	333 19	0.5922	0.0504
19	0.00	2.48	0.9842	83 34	1.3019	332 21	0.6060	0.0531
20	0.00	2.62	0.9837	83 13	1.3014	331 22	0.6192	0.0558
21	0.00	+2.75	0.9832	82 52	1.3008	330 24	-0.6319	0.0586
22	0.00	2.88	0.9827	82 30	1.3002	329 25	0.6441	0.0613
23	0.00	3.01	0.9823	82 9	1.2997	328 27	0.6558	0.0640
24	0.00	3.14	0.9817	81 49	1.2991	327 27	0.6671	0.0668
25	0.00	3.26	0.9812	81 28	1.2985	326 28	0.6780	0.0695
26	0.00	+3.39	0.9807	81 8	1.2979	325 29	-0.6885	0.0723
27	0.00	3.51	0.9802	80 47	1.2972	324 30	0.6986	0.0750
28	0.00	3.64	0.9797	80 27	1.2966	323 30	0.7083	0.0777
29	0.00	3.76	0.9792	80 7	1.2960	322 31	0.7176	0.0805
30	0.00	3.88	0.9788	79 48	1.2953	321 31	0.7267	0.0832
31	0.00	+4.00	0.9783	79 28	1.2947	320 31	-0.7354	0.0859
Feb. 1	0.00	4.11	0.9778	79 8	1.2940	319 31	0.7438	0.0887
2	0.00	4.23	0.9773	78 49	1.2933	318 30	0.7519	0.0914
3	0.00	4.34	0.9769	78 30	1.2927	317 30	0.7598	0.0942
4	0.00	4.46	0.9764	78 11	1.2920	316 29	0.7673	0.0969
5	0.00	+4.57	0.9760	77 53	1.2914	315 28	-0.7746	0.0996
6	0.00	4.68	0.9755	77 34	1.2907	314 27	0.7816	0.1024
7	0.00	4.78	0.9751	77 16	1.2900	313 26	0.7884	0.1051
8	0.00	4.89	0.9747	76 58	1.2894	312 25	0.7950	0.1079
9	0.00	5.00	0.9742	76 40	1.2887	311 23	0.8013	0.1106
10	0.00	+5.10	0.9738	76 22	1.2881	310 21	-0.8074	0.1133
11	0.00	5.20	0.9735	76 5	1.2874	309 19	0.8132	0.1161
12	0.00	5.30	0.9731	75 47	1.2868	308 17	0.8189	0.1188
13	0.00	5.40	0.9727	75 30	1.2861	307 15	0.8243	0.1215
14	0.00	5.50	0.9724	75 13	1.2854	306 13	0.8296	0.1243
15	0.00	+5.60	0.9720	74 57	1.2848	305 11	-0.8346	0.1270
16	0.00	5.69	0.9717	74 40	1.2842	304 8	0.8395	0.1298
17	0.00	5.79	0.9714	74 24	1.2836	303 5	0.8441	0.1325
18	0.00	5.88	0.9711	74 8	1.2830	302 2	0.8486	0.1352
19	0.00	5.97	0.9708	73 52	1.2824	300 59	0.8529	0.1380
20	0.00	+6.06	0.9706	73 36	1.2819	299 56	-0.8570	0.1407

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	α .	δ .	Log g .	α .	Log h .	δ .	Log i .	τ .
Feb. 20	0.00	+6.06	0.9706	73 36	1.2819	209 56	-0.8570	0.1407
21	0.00	6.15	0.9703	73 21	1.2813	208 53	0.8609	0.1434
22	0.00	6.24	0.9701	73 6	1.2808	207 50	0.8647	0.1462
23	0.00	6.33	0.9699	72 51	1.2802	206 46	0.8683	0.1489
24	0.00	6.41	0.9698	72 36	1.2797	205 42	0.8718	0.1517
25	0.00	+6.50	0.9696	72 21	1.2791	204 38	-0.8751	0.1544
26	0.00	6.58	0.9695	72 7	1.2787	203 35	0.8782	0.1571
27	0.00	6.66	0.9694	71 52	1.2782	202 31	0.8812	0.1599
28	0.00	6.74	0.9693	71 38	1.2778	201 26	0.8840	0.1626
Mar. 1	0.00	6.82	0.9692	71 25	1.2774	200 22	0.8866	0.1653
2	0.00	+6.90	0.9692	71 11	1.2769	209 18	-0.8891	0.1681
3	0.00	6.98	0.9692	70 58	1.2765	208 13	0.8915	0.1708
4	0.00	7.06	0.9692	70 44	1.2761	207 9	0.8937	0.1736
5	0.00	7.14	0.9692	70 31	1.2758	206 4	0.8957	0.1763
6	0.00	7.21	0.9693	70 18	1.2754	205 0	0.8977	0.1790
7	0.00	+7.29	0.9694	70 6	1.2751	203 55	-0.8995	0.1818
8	0.00	7.37	0.9695	69 53	1.2748	202 50	0.9012	0.1845
9	0.00	7.44	0.9697	69 41	1.2746	201 45	0.9027	0.1873
10	0.00	7.51	0.9699	69 29	1.2743	200 40	0.9041	0.1900
11	0.00	7.59	0.9701	69 17	1.2741	209 35	0.9053	0.1927
12	0.00	+7.66	0.9703	69 5	1.2739	208 30	-0.9064	0.1955
13	0.00	7.73	0.9706	68 53	1.2737	207 25	0.9074	0.1982
14	0.00	7.81	0.9709	68 42	1.2736	206 20	0.9082	0.2009
15	-0.01	7.88	0.9712	68 30	1.2734	205 15	0.9089	0.2037
16	0.01	7.95	0.9716	68 19	1.2733	204 10	0.9095	0.2064
17	-0.01	+8.02	0.9720	68 8	1.2732	203 5	-0.9099	0.2092
18	0.01	8.09	0.9724	67 57	1.2732	202 0	0.9102	0.2119
19	0.01	8.17	0.9728	67 46	1.2731	200 55	0.9104	0.2146
20	0.01	8.24	0.9733	67 36	1.2731	200 50	0.9105	0.2173
21	0.01	8.31	0.9738	67 25	1.2732	200 46	0.9104	0.2201
22	-0.01	+8.38	0.9744	67 14	1.2732	207 41	-0.9102	0.2228
23	0.01	8.45	0.9750	67 4	1.2732	206 36	0.9098	0.2256
24	0.01	8.52	0.9756	66 54	1.2733	205 31	0.9093	0.2283
25	0.01	8.60	0.9762	66 44	1.2734	204 27	0.9087	0.2311
26	0.01	8.67	0.9769	66 33	1.2736	203 22	0.9080	0.2338
27	-0.01	+8.74	0.9776	66 23	1.2737	202 18	-0.9071	0.2365
28	0.01	8.81	0.9782	66 13	1.2739	201 13	0.9062	0.2393
29	0.01	8.89	0.9791	66 3	1.2741	200 9	0.9050	0.2420
30	0.01	8.96	0.9799	65 54	1.2744	200 5	0.9038	0.2447
31	0.01	9.03	0.9807	65 44	1.2746	200 1	0.9024	0.2475
Apr. 1	-0.01	+9.11	0.9816	65 34	1.2749	206 57	-0.9008	0.2502
2	0.01	9.18	0.9825	65 25	1.2752	205 53	0.8992	0.2530
3	0.01	9.26	0.9834	65 15	1.2756	204 49	0.8974	0.2557
4	0.01	9.33	0.9843	65 5	1.2759	203 45	0.8955	0.2584
5	0.01	9.41	0.9853	64 56	1.2763	202 40	0.8934	0.2612
6	-0.01	+9.49	0.9863	64 46	1.2766	201 30	-0.8912	0.2639
7	0.01	9.57	0.9874	64 37	1.2770	200 25	0.8899	0.2667
8	0.01	9.65	0.9884	64 27	1.2774	200 20	0.8884	0.2694
9	0.01	9.73	0.9895	64 18	1.2778	200 15	0.8868	0.2721
10	0.01	9.81	0.9906	64 9	1.2783	200 10	0.8851	0.2749
11	-0.01	+9.89	0.9918	63 59	1.2787	206 24	-0.8781	0.2776

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	α .	δ .	Log g .	g .	Log h .	h .	Log i .	τ .
Apr. 11	-0.01	+ 9.89	0.9918	63 59	1.2787	246 24	-0.8781	0.2776
12	0.01	9.97	0.9929	63 50	1.2792	245 22	0.8751	0.2803
13	0.01	10.05	0.9941	63 40	1.2797	244 20	0.8719	0.2831
14	0.01	10.14	0.9953	63 31	1.2802	243 18	0.8685	0.2858
15	0.01	10.22	0.9966	63 21	1.2807	242 16	0.8651	0.2886
16	-0.01	+10.31	0.9979	63 12	1.2812	241 14	-0.8614	0.2913
17	0.01	10.40	0.9992	63 2	1.2818	240 13	0.8576	0.2940
18	0.01	10.49	1.0005	62 52	1.2823	239 12	0.8536	0.2968
19	0.01	10.58	1.0018	62 43	1.2829	238 11	0.8495	0.2995
20	0.01	10 67	1.0032	62 33	1.2835	237 10	0.8452	0.3022
21	-0.01	+10.76	1.0045	62 23	1.2841	236 9	-0.8408	0.3050
22	0.01	10.85	1.0059	62 14	1.2847	235 9	0.8361	0.3077
23	0.01	10.95	1.0073	62 4	1.2853	234 8	0.8313	0.3105
24	0.01	11.04	1.0088	61 54	1.2859	233 8	0.8263	0.3132
25	0.01	11.14	1.0102	61 44	1.2865	232 8	0.8212	0.3159
26	-0.01	+11.24	1.0117	61 34	1.2871	231 8	-0.8158	0.3187
27	0.01	11.34	1.0132	61 24	1.2877	230 9	0.8103	0.3214
28	0.01	11.44	1.0147	61 14	1.2883	229 10	0.8045	0.3241
29	0.01	11.54	1.0162	61 4	1.2890	228 11	0.7986	0.3269
30	0.01	11.64	1.0177	60 53	1.2896	227 12	0.7925	0.3296
May. 1	-0.01	+11.75	1.0193	60 43	1.2903	226 13	-0.7861	0.3324
2	0.01	11.85	1.0208	60 33	1.2909	225 15	0.7795	0.3351
3	0.01	11.96	1.0224	60 22	1.2915	224 16	0.7728	0.3378
4	0.01	12.07	1.0239	60 11	1.2922	223 18	0.7657	0.3406
5	0.01	12.18	1.0255	60 1	1.2928	222 20	0.7585	0.3433
6	-0.01	+12.29	1.0271	59 50	1.2934	221 22	-0.7510	0.3461
7	0.01	12.40	1.0287	59 39	1.2941	220 25	0.7432	0.3488
8	0.01	12.52	1.0303	59 28	1.2947	219 28	0.7352	0.3515
9	0.01	12.63	1.0320	59 17	1.2953	218 31	0.7269	0.3543
10	0.01	12.75	1.0336	59 6	1.2959	217 34	0.7183	0.3570
11	-0.01	+12.86	1.0352	58 55	1.2965	216 37	-0.7094	0.3597
12	0.01	12.98	1.0368	58 44	1.2971	215 40	0.7002	0.3625
13	0.01	13.10	1.0385	58 32	1.2977	214 44	0.6907	0.3652
14	0.01	13.22	1.0401	58 21	1.2983	213 48	0.6809	0.3680
15	0.01	13.35	1.0418	58 9	1.2989	212 52	0.6707	0.3707
16	-0.01	+13.47	1.0434	57 58	1.2995	211 56	-0.6601	0.3734
17	0.01	13.60	1.0451	57 46	1.3001	210 59	0.6492	0.3762
18	0.01	13.72	1.0467	57 34	1.3006	210 5	0.6379	0.3789
19	0.01	13.85	1.0484	57 22	1.3011	209 9	0.6261	0.3816
20	0.01	13.98	1.0500	57 10	1.3016	208 14	0.6139	0.3844
21	-0.01	+14.11	1.0516	56 58	1.3022	207 19	-0.6012	0.3871
22	0.01	14.24	1.0533	56 46	1.3027	206 24	0.5881	0.3899
23	0.01	14.37	1.0549	56 34	1.3031	205 29	0.5743	0.3926
24	0.01	14.50	1.0566	56 22	1.3036	204 35	0.5600	0.3953
25	0.01	14.63	1.0582	56 9	1.3041	203 40	0.5451	0.3981
26	-0.01	+14.77	1.0598	55 57	1.3046	202 46	-0.5296	0.4008
27	0.01	14.90	1.0615	55 44	1.3050	201 52	0.5134	0.4035
28	0.01	15.04	1.0631	55 32	1.3053	200 58	0.4964	0.4063
29	0.01	15.18	1.0647	55 19	1.3058	200 4	0.4786	0.4090
30	0.01	15.31	1.0663	55 6	1.3062	199 10	0.4598	0.4118
31	-0.01	+15.45	1.0679	54 53	1.3066	198 16	-0.4401	0.4145

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	μ .	f .	Log g .	g .	Log h .	h .	Log i .	τ .
May 31	-0.01	+15.45	1.0679	54 53	1.3066	198 16	-0.4401	0.4145
June 1	0.01	15.50	1.0695	54 40	1.3070	197 23	0.4195	0.4172
2	0.01	15.73	1.0711	54 27	1.3073	196 29	0.3975	0.4200
3	0.01	15.88	1.0727	54 14	1.3076	195 35	0.3743	0.4227
4	0.01	16.02	1.0743	54 1	1.3079	194 42	0.3497	0.4254
5	-0.01	+16.16	1.0758	53 48	1.3082	193 49	-0.3235	0.4282
6	0.01	16.30	1.0774	53 35	1.3086	192 56	0.2955	0.4309
7	0.01	16.44	1.0790	53 22	1.3088	192 3	0.2655	0.4337
8	0.01	16.59	1.0805	53 8	1.3091	191 9	0.2331	0.4364
9	0.01	16.74	1.0820	52 55	1.3093	190 16	0.1978	0.4391
10	-0.01	+16.88	1.0836	52 41	1.3095	189 24	-0.1595	0.4419
11	0.01	17.03	1.0851	52 28	1.3097	188 31	0.1174	0.4446
12	0.01	17.18	1.0866	52 14	1.3099	187 38	0.0705	0.4474
13	0.01	17.32	1.0881	52 0	1.3100	186 45	0.0177	0.4501
14	0.01	17.47	1.0895	51 47	1.3102	185 53	9.9577	0.4528
15	-0.01	+17.62	1.0910	51 33	1.3103	185 0	-9.9878	0.4556
16	0.01	17.76	1.0924	51 20	1.3104	184 7	9.9044	0.4583
17	0.01	17.91	1.0938	51 6	1.3105	183 15	9.7011	0.4610
18	0.01	18.06	1.0952	50 52	1.3105	182 22	9.5652	0.4638
19	0.01	18.21	1.0967	50 38	1.3106	181 30	9.3657	0.4665
20	-0.01	+18.35	1.0981	50 24	1.3106	180 37	-9.9837	0.4693
21	0.01	18.50	1.0994	50 10	1.3106	179 45	+9.5916	0.4720
22	0.01	18.65	1.1008	49 57	1.3106	178 53	9.2405	0.4747
23	0.01	18.80	1.1022	49 43	1.3105	178 0	9.4910	0.4775
24	0.01	18.95	1.1035	49 29	1.3105	177 7	9.6485	0.4802
25	-0.01	+19.09	1.1048	49 15	1.3104	176 15	+9.7635	0.4829
26	0.01	19.24	1.1061	49 1	1.3103	175 22	9.8543	0.4857
27	0.01	19.39	1.1074	48 47	1.3102	174 30	9.9204	0.4884
28	0.01	19.54	1.1087	48 33	1.3101	173 37	9.9932	0.4912
29	0.01	19.68	1.1100	48 19	1.3099	172 45	0.0488	0.4939
30	-0.01	+19.83	1.1112	48 5	1.3098	171 52	+0.0978	0.4966
July 1	0.01	19.97	1.1125	47 51	1.3096	170 59	0.1418	0.4994
2	0.01	20.12	1.1137	47 38	1.3094	170 6	0.1817	0.5021
3	0.01	20.26	1.1149	47 24	1.3092	169 14	0.2180	0.5048
4	0.01	20.41	1.1161	47 10	1.3089	168 21	0.2515	0.5076
5	-0.01	+20.55	1.1173	46 56	1.3087	167 28	+0.2825	0.5103
6	0.01	20.70	1.1184	46 43	1.3084	166 35	0.3113	0.5131
7	0.01	20.84	1.1195	46 29	1.3081	165 42	0.3381	0.5158
8	0.01	20.98	1.1207	46 15	1.3078	164 49	0.3633	0.5185
9	0.01	21.12	1.1218	46 1	1.3075	163 56	0.3871	0.5213
10	-0.01	+21.26	1.1229	45 47	1.3071	163 2	+0.4094	0.5240
11	0.01	21.40	1.1240	45 34	1.3068	162 9	0.4306	0.5268
12	0.01	21.54	1.1251	45 20	1.3064	161 16	0.4507	0.5295
13	0.01	21.68	1.1261	45 7	1.3060	160 22	0.4697	0.5322
14	0.01	21.82	1.1272	44 53	1.3056	159 28	0.4879	0.5350
15	-0.01	+21.96	1.1282	44 40	1.3052	158 34	+0.5052	0.5377
16	0.01	22.09	1.1292	44 26	1.3048	157 40	0.5217	0.5404
17	0.01	22.23	1.1302	44 13	1.3043	156 46	0.5375	0.5432
18	0.01	22.36	1.1312	44 0	1.3039	155 52	0.5527	0.5459
19	0.01	22.49	1.1322	43 46	1.3034	154 58	0.5672	0.5487
20	-0.01	+22.62	1.1331	43 33	1.3029	154 4	+0.5811	0.5514

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	μ .	f .	$\log g$.	G.	$\log h$.	H.	$\log i$.	τ .
July 20	-0.01	+22.62	1.1331	43 33	1.3029	154 4	+0.5811	0.5514
21	0.01	22.75	1.1340	43 20	1.3024	153 9	0.5945	0.5541
22	0.01	22.88	1.1349	43 7	1.3019	152 15	0.6073	0.5569
23	0.01	23.01	1.1358	42 54	1.3014	151 20	0.6198	0.5596
24	0.01	23.14	1.1367	42 41	1.3009	150 25	0.6317	0.5623
25	-0.01	+23.27	1.1376	42 29	1.3003	149 30	+0.6431	0.5651
26	0.01	23.39	1.1385	42 16	1.2998	148 35	0.6543	0.5678
27	0.01	23.52	1.1394	42 4	1.2992	147 39	0.6649	0.5706
28	0.01	23.64	1.1402	41 51	1.2986	146 44	0.6752	0.5733
29	0.01	23.76	1.1411	41 39	1.2981	145 48	0.6852	0.5760
30	-0.01	+23.88	1.1419	41 26	1.2975	144 53	+0.6948	0.5788
31	0.01	24.00	1.1427	41 14	1.2969	143 56	0.7041	0.5815
Aug. 1	0.01	24.12	1.1435	41 2	1.2963	143 0	0.7131	0.5842
2	0.01	24.23	1.1443	40 50	1.2957	142 4	0.7218	0.5870
3	0.01	24.35	1.1450	40 38	1.2951	141 7	0.7302	0.5897
4	-0.01	+24.46	1.1458	40 26	1.2944	140 10	+0.7383	0.5925
5	0.01	24.58	1.1465	40 15	1.2938	139 13	0.7461	0.5952
6	0.01	24.69	1.1473	40 3	1.2932	138 16	0.7537	0.5979
7	0.01	24.80	1.1480	39 52	1.2926	137 19	0.7611	0.6007
8	0.01	24.91	1.1487	39 41	1.2920	136 22	0.7682	0.6034
9	-0.01	+25.02	1.1495	39 29	1.2913	135 24	+0.7751	0.6062
10	0.01	25.12	1.1502	39 18	1.2907	134 26	0.7818	0.6089
11	0.01	25.23	1.1509	39 8	1.2901	133 28	0.7882	0.6116
12	0.01	25.33	1.1516	38 57	1.2894	132 30	0.7944	0.6144
13	0.01	25.43	1.1522	38 46	1.2888	131 32	0.8004	0.6171
14	-0.01	+25.54	1.1529	38 36	1.2882	130 33	+0.8063	0.6198
15	0.01	25.64	1.1535	38 25	1.2876	129 34	0.8119	0.6226
16	0.01	25.73	1.1542	38 15	1.2869	128 35	0.8173	0.6253
17	0.01	25.83	1.1548	38 5	1.2863	127 36	0.8225	0.6281
18	0.01	25.93	1.1555	37 55	1.2857	126 37	0.8276	0.6308
19	-0.01	+26.02	1.1561	37 46	1.2851	125 37	+0.8325	0.6335
20	0.01	26.12	1.1568	37 36	1.2845	124 38	0.8372	0.6363
21	0.01	26.21	1.1574	37 26	1.2839	123 38	0.8417	0.6390
22	0.01	26.30	1.1580	37 17	1.2834	122 38	0.8461	0.6417
23	0.01	26.39	1.1586	37 8	1.2828	121 37	0.8503	0.6445
24	-0.01	+26.48	1.1592	36 59	1.2822	120 37	+0.8544	0.6472
25	0.01	26.57	1.1599	36 50	1.2817	119 36	0.8583	0.6500
26	0.01	26.66	1.1605	36 42	1.2811	118 36	0.8620	0.6527
27	0.01	26.75	1.1611	36 33	1.2806	117 35	0.8656	0.6554
28	0.01	26.83	1.1617	36 25	1.2801	116 33	0.8690	0.6582
29	-0.01	+26.92	1.1623	36 16	1.2796	115 32	+0.8723	0.6609
30	0.01	27.00	1.1629	36 8	1.2791	114 30	0.8755	0.6636
31	0.01	27.08	1.1635	36 0	1.2787	113 29	0.8785	0.6664
Sept. 1	0.01	27.17	1.1641	35 53	1.2782	112 27	0.8813	0.6691
2	0.01	27.25	1.1647	35 45	1.2778	111 25	0.8840	0.6719
3	-0.01	+27.33	1.1653	35 38	1.2773	110 23	+0.8866	0.6746
4	0.01	27.40	1.1659	35 30	1.2769	109 20	0.8890	0.6773
5	0.01	27.48	1.1665	35 23	1.2766	108 18	0.8915	0.6801
6	0.01	27.56	1.1671	35 16	1.2762	107 16	0.8935	0.6828
7	0.01	27.64	1.1677	35 10	1.2758	106 13	0.8956	0.6856
8	-0.01	+27.71	1.1683	35 3	1.2755	105 10	+0.8974	0.6883

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	α .	δ .	Log g .	α .	Log h .	α .	Log i .	τ .
Sept. 8	-0.01	+27.71	1.1683	35° 3'	1.2755	105° 10'	+0.8974	0.6883
9	0.01	27.79	1.1689	34 56	1.2752	104 7	0.8992	0.6910
10	0.01	27.87	1.1695	34 50	1.2749	103 4	0.9008	0.6938
11	0.01	27.94	1.1201	34 44	1.2746	102 1	0.9023	0.6965
12	0.01	28.01	1.1708	34 38	1.2744	100 57	0.9037	0.6992
13	-0.01	+28.09	1.1714	34 32	1.2741	99 54	+0.9050	0.7020
14	0.01	28.16	1.1721	34 26	1.2739	98 51	0.9061	0.7047
15	0.01	28.24	1.1727	34 21	1.2738	97 47	0.9071	0.7075
16	0.01	28.31	1.1734	34 16	1.2736	96 43	0.9079	0.7102
17	0.01	28.38	1.1740	34 10	1.2735	95 39	0.9087	0.7129
18	-0.01	+28.45	1.1747	34 5	1.2733	94 35	+0.9093	0.7157
19	0.01	28.53	1.1754	34 0	1.2732	93 32	0.9097	0.7184
20	0.01	28.60	1.1760	33 55	1.2732	92 28	0.9101	0.7211
21	0.01	28.67	1.1767	33 51	1.2731	91 24	0.9103	0.7239
22	0.01	28.74	1.1774	33 46	1.2731	90 19	0.9104	0.7266
23	-0.01	+28.81	1.1782	33 42	1.2731	89 15	+0.9104	0.7294
24	0.01	28.88	1.1789	33 38	1.2732	88 11	0.9103	0.7321
25	0.01	28.96	1.1796	33 34	1.2732	87 7	0.9100	0.7348
26	0.01	29.03	1.1804	33 30	1.2733	86 3	0.9096	0.7376
27	0.02	29.10	1.1811	33 26	1.2734	84 59	0.9090	0.7403
28	-0.02	+29.17	1.1819	33 22	1.2735	83 55	+0.9084	0.7430
29	0.02	29.25	1.1827	33 18	1.2737	82 50	0.9076	0.7458
30	0.02	29.32	1.1835	33 14	1.2738	81 46	0.9067	0.7485
Oct. 1	0.02	29.39	1.1843	33 11	1.2740	80 42	0.9056	0.7513
2	0.02	29.47	1.1851	33 8	1.2742	79 38	0.9044	0.7540
3	-0.02	+29.54	1.1859	33 5	1.2745	78 34	+0.9031	0.7567
4	0.02	29.62	1.1868	33 1	1.2747	77 30	0.9016	0.7595
5	0.02	29.69	1.1876	32 58	1.2750	76 26	0.9001	0.7622
6	0.02	29.77	1.1885	32 56	1.2753	75 22	0.8983	0.7650
7	0.02	29.85	1.1894	32 53	1.2757	74 18	0.8965	0.7677
8	-0.02	+29.92	1.1903	32 50	1.2760	73 14	+0.8945	0.7704
9	0.02	30.00	1.1912	32 47	1.2764	72 10	0.8924	0.7732
10	0.02	30.08	1.1921	32 45	1.2768	71 7	0.8901	0.7759
11	0.02	30.16	1.1931	32 42	1.2772	70 2	0.8876	0.7786
12	0.02	30.24	1.1941	32 40	1.2776	68 59	0.8851	0.7814
13	-0.02	+30.32	1.1950	32 37	1.2780	67 56	+0.8823	0.7841
14	0.02	30.41	1.1960	32 35	1.2785	66 53	0.8795	0.7869
15	0.02	30.49	1.1970	32 32	1.2790	65 50	0.8764	0.7896
16	0.02	30.57	1.1980	32 30	1.2795	64 46	0.8733	0.7923
17	0.02	30.66	1.1991	32 28	1.2800	63 44	0.8700	0.7951
18	-0.02	+30.75	1.2001	32 26	1.2805	62 41	+0.8665	0.7978
19	0.02	30.84	1.2012	32 24	1.2810	61 38	0.8628	0.8005
20	0.02	30.92	1.2023	32 22	1.2816	60 35	0.8590	0.8033
21	0.02	31.01	1.2034	32 19	1.2822	59 33	0.8550	0.8060
22	0.02	31.11	1.2045	32 17	1.2827	58 30	0.8508	0.8088
23	-0.02	+31.20	1.2056	32 15	1.2833	57 28	+0.8465	0.8115
24	0.02	31.29	1.2067	32 13	1.2839	56 26	0.8420	0.8142
25	0.02	31.39	1.2079	32 11	1.2845	55 23	0.8373	0.8170
26	0.02	31.48	1.2091	32 9	1.2851	54 22	0.8324	0.8197
27	0.02	31.58	1.2103	32 7	1.2858	53 20	0.8274	0.8224
28	-0.02	+31.68	1.2114	32 5	1.2864	52 18	+0.8221	0.8252

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	m.	f.	Log g.	g.	Log h.	h.	Log i.	τ.
Oct. 28	-0.02	+31.68	1.2114	32° 5'	1.2864	52° 18'	+0.8221	0.8252
29	0.02	31.78	1.2126	32 3	1.2870	51 17	0.8166	0.8279
30	0.02	31.88	1.2139	32 0	1.2877	50 15	0.8109	0.8307
31	0.02	31.98	1.2151	31 58	1.2883	49 14	0.8050	0.8334
Nov. 1	0.02	32.09	1.2163	31 56	1.2890	48 13	0.7989	0.8361
2	-0.02	+32.19	1.2176	31 54	1.2896	47 12	+0.7925	0.8389
3	0.02	32.30	1.2189	31 52	1.2903	46 12	0.7860	0.8416
4	0.02	32.41	1.2202	31 49	1.2909	45 11	0.7792	0.8444
5	0.02	32.52	1.2215	31 47	1.2916	44 11	0.7721	0.8471
6	0.02	32.63	1.2228	31 45	1.2923	43 10	0.7648	0.8498
7	-0.02	+32.75	1.2241	31 42	1.2929	42 11	+0.7572	0.8526
8	0.02	32.86	1.2254	31 40	1.2935	41 11	0.7494	0.8553
9	0.02	32.98	1.2267	31 37	1.2942	40 11	0.7412	0.8580
10	0.02	33.10	1.2281	31 34	1.2949	39 11	0.7328	0.8608
11	0.02	33.22	1.2294	31 32	1.2955	38 12	0.7241	0.8635
12	-0.02	+33.34	1.2308	31 29	1.2961	37 13	+0.7150	0.8663
13	0.02	33.46	1.2322	31 26	1.2968	36 13	0.7056	0.8690
14	0.02	33.58	1.2335	31 23	1.2974	35 14	0.6959	0.8717
15	0.02	33.71	1.2349	31 20	1.2980	34 15	0.6858	0.8745
16	0.02	33.83	1.2363	31 17	1.2986	33 17	0.6753	0.8772
17	-0.02	+33.96	1.2377	31 14	1.2992	32 18	+0.6644	0.8799
18	0.02	34.09	1.2391	31 11	1.2998	31 20	0.6531	0.8827
19	0.02	34.22	1.2405	31 8	1.3004	30 21	0.6413	0.8854
20	0.02	34.35	1.2419	31 4	1.3010	29 23	0.6291	0.8882
21	0.02	34.49	1.2433	31 1	1.3015	28 25	0.6163	0.8909
22	-0.02	+34.62	1.2448	30 57	1.3020	27 27	+0.6031	0.8936
23	0.02	34.76	1.2462	30 53	1.3026	26 29	0.5892	0.8964
24	0.02	34.89	1.2476	30 50	1.3031	25 31	0.5748	0.8991
25	0.02	35.03	1.2490	30 46	1.3036	24 34	0.5598	0.9018
26	0.02	35.17	1.2505	30 42	1.3041	23 36	0.5441	0.9046
27	-0.02	+35.31	1.2519	30 38	1.3046	22 39	+0.5275	0.9073
28	0.02	35.45	1.2533	30 34	1.3051	21 42	0.5102	0.9101
29	0.02	35.60	1.2547	30 29	1.3056	20 46	0.4920	0.9128
30	0.02	35.74	1.2562	30 25	1.3060	19 47	0.4729	0.9155
Dec. 1	0.02	35.89	1.2576	30 21	1.3064	18 50	0.4528	0.9183
2	-0.02	+36.03	1.2590	30 16	1.3067	17 53	+0.4315	0.9210
3	0.02	36.18	1.2605	30 12	1.3071	16 57	0.4090	0.9237
4	0.02	36.33	1.2619	30 7	1.3075	16 0	0.3851	0.9265
5	0.02	36.47	1.2633	30 2	1.3079	15 3	0.3597	0.9292
6	0.02	36.62	1.2647	29 57	1.3082	14 7	0.3326	0.9320
7	-0.02	+36.77	1.2661	29 52	1.3085	13 10	+0.3034	0.9347
8	0.02	36.93	1.2675	29 47	1.3088	12 14	0.2720	0.9374
9	0.02	37.08	1.2689	29 42	1.3090	11 17	0.2381	0.9402
10	0.02	37.23	1.2703	29 36	1.3093	10 21	0.2011	0.9429
11	0.02	37.38	1.2717	29 31	1.3095	9 25	0.1604	0.9457
12	-0.02	+37.54	1.2731	29 26	1.3097	8 28	+0.1155	0.9484
13	0.02	37.69	1.2745	29 20	1.3099	7 32	0.0652	0.9511
14	0.02	37.84	1.2759	29 14	1.3100	6 36	0.0080	0.9539
15	0.02	38.00	1.2773	29 8	1.3102	5 40	9.9421	0.9566
16	0.02	38.15	1.2786	29 3	1.3103	4 44	9.8639	0.9593
17	-0.02	+38.31	1.2800	28 57	1.3104	3 48	+9.7686	0.9621

FOR WASHINGTON MEAN MIDNIGHT.

CONSTANTS FOR FACILITATING THE REDUCTION OF THE FIXED STARS.

1867.	π .	f .	Log g .	G .	Log h .	H .	Log i .	τ .
Dec. 17	-0.02	+35.31	1.2800	28 57	1.3104	3 48	+9.7686	0.9621
18	0.02	35.47	1.2813	28 51	1.3105	2 52	9.6464	0.9648
19	0.02	35.62	1.2826	28 45	1.3105	1 56	9.4749	0.9676
20	0.02	35.78	1.2840	28 38	1.3106	1 0	9.1863	0.9703
21	0.02	35.93	1.2853	28 32	1.3106	0 4	+7.9596	0.9730
22	-0.02	+39.09	1.2866	28 26	1.3106	359 7	-9.1329	0.9758
23	0.02	39.24	1.2879	28 20	1.3106	358 11	9.4476	0.9785
24	0.02	39.40	1.2892	28 13	1.3105	357 15	9.6281	0.9812
25	0.02	39.56	1.2904	28 7	1.3104	356 19	9.7553	0.9840
26	0.02	39.71	1.2917	28 0	1.3103	355 22	9.8535	0.9867
27	-0.02	+39.87	1.2929	27 53	1.3102	354 27	-9.9334	0.9895
28	0.02	40.02	1.2942	27 47	1.3101	353 30	0.0008	0.9922
29	0.02	40.18	1.2954	27 40	1.3099	352 34	0.0588	0.9949
30	0.02	40.33	1.2966	27 33	1.3097	351 38	0.1100	0.9977
31	0.02	40.48	1.2978	27 26	1.3095	350 42	0.1556	1.0004
32	-0.02	+40.64	1.2990	27 19	1.3093	349 45	-0.1968	1.0031

BESSEL'S FORMULÆ OF REDUCTION FOR THE FIXED STARS,

WITH DR. PETERS'S COEFFICIENTS, AND BESSEL'S NOTATION.

$$A = \tau - 0.34241 \sin \Omega + 0.00410 \sin 2\Omega - 0.02519 \sin 2\odot + 0.00294 \sin (\odot + 82^\circ 21').$$

$$B = -9''.2237 \cos \Omega + 0''.0896 \cos 2\Omega - 0''.5507 \cos 2\odot - 0''.0093 \cos (\odot + 280^\circ 39').$$

$$C = -20''.4451 \cos \alpha \cos \odot.$$

$$D = -20''.4451 \sin \odot.$$

$$E = -0''.0471 \sin \Omega + 0''.0015 \sin 2\Omega - 0''.0034 \sin 2\odot.$$

$$a = 46''.0813 + 20''.0549 \sin \alpha \tan \delta.$$

$$b = \cos \alpha \tan \delta.$$

$$c = \cos \alpha \sec \delta.$$

$$d = \sin \alpha \sec \delta.$$

$$a' = 20''.0549 \cos \alpha.$$

$$b' = -\sin \alpha.$$

$$c' = \tan \alpha \cos \delta - \sin \alpha \sin \delta.$$

$$d' = \cos \alpha \sin \delta.$$

μ = the annual proper motion in right ascension.

μ' = the annual proper motion in declination.

τ = the time reckoned from the moment when the sun's mean longitude was 280° (Jan. 0th + .169) as expressed in fractional parts of a tropical year.

\odot = the sun's true longitude.

Ω = the longitude of the moon's ascending node.

α = the obliquity of the ecliptic.

α = the star's mean right ascension for the beginning of the year.

δ = the star's mean declination for the beginning of the year.

α = the star's apparent right ascension at the time τ .

δ = the star's apparent declination at the time τ .

$$a' - a = A a + B b + C c + D d + E + \tau \mu.$$

$$\delta' - \delta = A a' + B b' + C c' + D d' + \tau \mu'.$$

The following formulae may also be used by putting

$$f = 46''.0813 A.$$

$$g \cos G = 20''.0549 A.$$

$$g \sin G = B.$$

$$i = C \tan \alpha.$$

$$h \sin H = C.$$

$$h \cos H = D.$$

$$\alpha' - \alpha = E + f + \tau \mu + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta.$$

$$\delta' - \delta = \tau \mu' + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta + i \cos \delta.$$

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
21 Cassiopeæ . . .	6	0 36 54.90	+ 3.822	+74° 15' 35.9	+19.74
POLARIS . . .	2	1 10 16.69	19.664	88 36 1.3	19.12
Δ Cassiopeæ (38) . . .	6	1 21 22.60	4.345	69 34 43.2	18.72
50 Cassiopeæ . . .	4	1 52 8.06	4.969	71 46 31.3	17.70
ι Cassiopeæ . . .	4	2 18 8.65	4.833	66 48 6.3	16.50
48 Cephei (H.) . . .	6	3 3 33.23	+ 7.328	+77 14 27.3	+13.90
α Camelopardalis (9) . . .	4	4 40 50.71	5.910	66 6 43.2	6.80
Groombridge 966 . . .	6.7	5 21 57.73	7.984	74 56 55.5	+ 3.31
22 Camelopardalis (H.) . . .	5.4	6 4 10.98	6.619	69 21 39.7	— 0.48
51 Cephei (H.) . . .	5	6 37 11.35	30.361	87 14 32.6	3.24
Piazzi vii. 67 . . .	6	7 17 0.91	+ 6.317	+68 43 55.5	— 6.69
3 Ursæ Majoris (H.) . . .	6	7 59 32.40	6.076	68 51 39.9	10.00
σ² Ursæ Majoris . . .	5	8 58 39.02	5.385	67 40 15.1	14.19
1 Draconis (H.) . . .	4.5	9 17 52.80	9.177	81 54 36.1	15.24
24 Ursæ Majoris (d) . . .	5.4	9 22 40.08	5.439	70 24 43.4	15.46
32 Ursæ Majoris . . .	6	10 8 20.48	+ 4.447	+65 46 12.1	—17.76
9 Draconis (H.) . . .	5.4	10 23 42.52	5.325	76 23 46.8	18.34
λ Draconis . . .	3.4	11 23 28.43	3.646	70 3 51.9	19.86
4 Draconis (H.) . . .	5.4	12 5 56.10	2.914	78 21 18.1	20.06
κ Draconis . . .	3.4	12 27 47.48	2.604	70 31 16.9	19.93
32 Camelop. (H.) (fol.) . . .	5.4	12 48 10.97	+ 0.343	+84 8 8.1	—19.63
α Draconis . . .	3.4	14 0 47.40	+ 1.623	65 0 42.5	17.37
5 Ursæ Minoris . . .	5.4	14 27 50.48	— 0.217	76 17 12.8	16.04
β Ursæ Minoris . . .	2	14 51 7.40	0.254	74 41 55.3	14.75
γ² Ursæ Minoris . . .	3	15 20 57.67	0.150	72 18 26.5	12.80
ζ Ursæ Minoris . . .	4.5	15 48 52.23	— 2.297	+78 12 7.9	—10.86
Groombridge 2320 . . .	6.5	16 5 58.07	+ 0.131	68 9 38.5	9.50
15 Draconis (A) . . .	5	16 28 15.38	— 0.144	69 3 20.9	7.78
ε Ursæ Minoris . . .	4.5	16 59 42.01	6.401	82 15 4.8	5.22
ω Draconis . . .	5	17 37 43.97	0.356	68 49 7.2	1.65
ψ¹ Draconis (pr.) . . .	4.5	17 44 18.54	— 1.084	+72 12 47.9	— 1.63
δ Ursæ Minoris . . .	4.5	18 15 14.63	19.384	86 36 16.2	+ 1.34
50 Draconis . . .	6	18 50 38.81	— 1.895	75 16 30.9	4.45
δ Draconis . . .	3	19 12 31.00	+ 0.035	67 25 38.9	6.31
τ Draconis . . .	5	19 18 5.57	— 1.104	73 6 27.0	6.80
ε Draconis . . .	4	19 48 36.47	— 0.169	+69 55 43.8	+ 9.15
λ Ursæ Minoris (B.) . . .	6.7	19 57 12.89	58.260	88 54 35.4	9.83
κ Cephei . . .	4.5	20 13 18.77	1.886	77 18 33.1	11.02
Groombridge 3241 . . .	6.7	20 30 33.33	0.210	72 4 51.5	12.23
12 Year Cat. 1879 . . .	6	20 53 31.49	— 2.480	80 3 5.8	13.73
β Cephei . . .	3	21 26 55.95	+ 0.802	+69 58 36.9	+15.71
11 Cephei . . .	5	21 39 57.83	0.908	70 41 57.0	16.50
79 Draconis . . .	6.7	21 51 12.75	0.740	73 4 23.5	16.96
226 Cephei (B.) . . .	5.6	22 29 55.67	1.085	75 32 27.8	18.52
ι Cephei . . .	4.3	22 44 57.06	2.117	65 30 4.5	18.85
ο Cephei . . .	6.5	23 13 10.56	+ 2.435	+67 23 1.7	+19.62
γ Cephei . . .	3.4	23 33 54.60	2.399	76 53 24.6	20.07
Groombridge 4163 . . .	7	23 48 23.54	2.845	+73 40 12.3	20.00
β Hydri . . .	3	0 18 43.08	3.283	—78 0 15.1	+20.25
β Chamæleontis . . .	5	12 10 35.93	3.333	78 34 25.8	—20.04
α Trianguli Australis . . .	2	16 34 36.72	6.279	68 46 42.0	— 7.38
σ Octantis . . .	6	18 0 54.67	+109.826	—89 16 43.3	+ 0.15

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
α Andromedæ	2	0 1 31.03	+ 3.067	+28° 21' 22.7	+19.91
γ Pegasi (<i>Algenib</i>) . .	3.2	0 6 23.37	3.082	+14 26 38.8	20.04
α Cassiopeæ	var.	0 32 58.59	3.362	+55 48 27.1	19.81
β Ceti	2	0 36 54.70	3.014	—18 43 2.4	19.81
ϵ Piscium	4	0 56 2.61	3.109	+ 7 10 24.0	19.46
θ^1 Ceti	3	1 17 22.55	2.998	— 8 52 14.2	+18.70
η Piscium	4.3	1 24 22.13	3.199	+14 39 32.9	18.71
α Eridani (<i>Achernar</i>) . .	1	1 32 45.32	2.235	—57 54 46.8	18.42
\circ Piscium	4	1 38 22.43	3.161	+ 8 29 13.8	18.25
β Arietis	3.2	1 47 17.83	3.300	+20 9 23.9	17.79
α Arietis	2	1 59 40.85	3.367	+22 49 56.0	+17.24
δ^1 Ceti (ξ^1)	4.5	2 5 57.16	3.169	+ 8 13 17.2	17.06
γ Ceti	3.4	2 36 24.68	3.102	+ 2 40 23.7	15.37
α Ceti	2.3	2 55 19.75	3.128	+ 3 33 57.6	14.36
ζ Arietis	4.5	3 7 15.65	3.436	+20 32 58.5	13.65
α Persei	2	3 14 50.41	4.246	+49 23 5.6	+13.19
δ Persei	3	3 33 27.86	4.237	+47 21 33.2	11.92
η Tauri	3	3 39 34.93	3.553	+23 41 28.9	11.47
ζ Persei	3	3 45 46.61	3.755	+31 29 9.3	11.03
γ^1 Eridani	3	3 51 49.49	2.796	—13 53 20.5	10.52
γ Tauri	4	4 12 13.61	3.407	+15 18 13.7	+ 9.06
ϵ Tauri	4.3	4 20 51.17	3.495	+18 52 57.3	8.38
α Tauri (<i>Aldebaran</i>) . .	1	4 28 17.48	3.435	+16 14 22.0	7.65
ϵ Aurigæ	3	4 48 20.13	3.896	+32 57 8.3	6.15
δ Orionis	5	4 56 58.30	3.425	+15 12 58.1	5.42
α Aurigæ (<i>Capella</i>) . .	1	5 6 52.07	4.421	+45 51 32.9	+ 4.19
β Orionis (<i>Rigel</i>) . . .	1	5 8 8.81	2.881	— 8 21 28.0	4.48
β Tauri	2	5 17 53.15	3.787	+28 29 30.3	3.47
δ Orionis	2	5 25 12.78	3.064	— 0 24 1.6	2.99
α Leporis	3	5 26 51.94	2.646	—17 55 11.1	2.89
ϵ Orionis	2	5 29 27.93	3.042	— 1 17 22.4	+ 2.65
α Columbæ	2	5 34 50.10	2.173	—34 8 46.7	2.20
α Orionis	var.	5 47 58.33	3.247	+ 7 22 45.7	+ 1.05
μ Geminorum	3	6 14 54.86	3.633	+22 34 42.8	— 1.44
α Argus (<i>Canopus</i>) . .	1	6 21 0.09	1.330	—52 37 26.5	1.83
γ Geminorum	2.3	6 30 1.71	3.469	+16 30 35.6	— 2.66
α Canis Maj. (<i>Sirius</i>) . .	1	6 39 17.19	2.645	—16 32 8.5	4.63
ϵ Canis Majoris	2.1	6 53 24.01	2.358	—28 47 36.4	4.65
δ Canis Majoris	2	7 2 59.07	2.440	—26 11 1.9	5.43
δ Geminorum	3.4	7 12 10.71	3.591	+22 13 27.3	6.23
α Geminor. (<i>Castor</i>) . .	2.1	7 26 6.33	3.840	+32 10 37.5	— 7.43
α Can. Min. (<i>Procyon</i>) . .	1	7 32 20.39	3.146	+ 5 33 48.3	8.91
β Geminor. (<i>Pollux</i>) . .	1.2	7 37 10.46	3.682	+28 20 40.8	8.31
ϕ Geminorum	5	7 45 21.30	3.685	+27 6 25.2	8.95
δ Argus (ι)	3	8 1 52.87	2.556	—23 55 21.9	10.11
ϵ Hydræ	3.4	8 39 43.91	3.184	+ 6 54 17.4	—12.91
ϵ Ursæ Majoris	3	8 50 5.30	4.143	+48 33 41.1	13.83
α Cancræ	5	9 0 32.47	3.256	+11 12 5.2	14.22
ϵ Argus	2	9 13 31.74	+ 1.602	—58 43 2.2	—14.92

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		^h ^m ^s	^s	[°] ['] [″]	[″]
α Hydræ	2	9 21 3.11	+ 2.950	— 8 5 0.5	—15.38
θ Ursæ Majoris	3	9 23 56.68	4.054	+52 16 53.0	16.15
ϵ Leonis	3	9 38 17.86	3.421	+24 23 6.2	16.36
μ Leonis	4	9 45 11.62	3.425	+26 37 54.7	16.74
α Leonis (<i>Regulus</i>) . .	1.2	10 1 17.22	3.204	+12 36 58.1	17.41
γ^1 Leonis	2	10 12 38.17	3.318	+20 30 46.7	—18.04
ρ Leonis	4	10 25 48.42	3.167	+ 9 59 23.4	18.41
η Argus	2	10 39 54.43	2.309	—58 59 6.5	18.75
ι Leonis	5	10 42 15.81	3.160	+11 14 52.9	18.93
α Ursæ Majoris	2	10 55 29.74	3.765	+62 28 5.3	19.35
δ Leonis	2.3	11 7 1.94	3.203	+21 15 6.6	—19.66
δ Crateris	3.4	11 12 41.59	2.996	—14 3 33.8	19.45
τ Leonis	5	11 21 5.85	3.088	+ 3 35 18.1	19.79
η^1 Leonis (<i>v</i>)	5.4	11 30 8.39	3.072	— 0 5 23.0	19.86
β Leonis	2	11 42 16.45	3.066	+15 18 56.2	20.10
γ Ursæ Majoris	2.3	11 46 49.33	3.191	+54 26 3.0	—20.02
\circ Virginis	4	11 58 26.09	3.061	+ 9 28 17.7	20.03
η Virginis	3.4	12 13 6.14	3.068	+ 0 4 21.2	20.05
α^1 Crucis	1	12 19 12.91	3.263	—62 21 38.4	19.93
β Corvi	2.3	12 27 24.24	3.135	—22 39 39.9	19.98
ι^2 Canum Venaticorum .	3	12 49 48.15	2.818	+39 2 14.2	—19.52
θ Virginis	4.5	13 3 3.96	3.100	— 4 49 41.6	19.34
α Virginis (<i>Spica</i>) . .	1	13 18 11.38	3.152	—10 27 57.9	18.93
ζ Virginis	3.4	13 27 55.07	3.052	+ 0 5 6.7	18.54
η Ursæ Majoris	2	13 42 17.86	2.375	+49 58 41.0	18.11
η Bootis	3	13 48 21.15	2.859	+19 3 55.8	—18.21
β Centauri	1	13 54 27.78	4.159	—59 43 46.6	17.67
α Bootis (<i>Arcturus</i>) . .	1	14 9 35.74	2.734	+19 52 35.1	18.90
θ Bootis	4.3	14 20 40.10	2.043	+52 27 59.0	16.80
α^2 Centauri	1	14 30 36.20	4.082	—60 16 54.2	15.05
ϵ Bootis	2.3	14 39 10.74	2.621	+27 38 10.7	—15.40
α^3 Libræ	2.3	14 43 31.48	3.306	—15 29 13.1	15.92
β Bootis	3	14 56 56.17	2.260	+40 54 58.7	14.43
β Libræ	2	15 9 51.18	3.219	— 8 53 24.3	13.57
μ^1 Bootis	4.3	15 19 28.02	2.268	+37 50 42.3	12.84
α Coronæ Borealis . . .	2	15 29 3.44	2.539	+27 9 51.8	—12.84
α Serpentis	2.3	15 37 43.09	2.950	+ 6 50 46.8	11.61
ϵ Serpentis	3.4	15 44 11.28	2.987	+ 4 52 48.5	11.13
ϵ Coronæ Borealis . . .	4	15 52 4.99	2.485	+27 15 53.3	10.67
δ Scorpii	2.3	15 52 28.38	3.535	—22 14 25.7	10.60
β^1 Scorpii	2	15 57 42.36	3.476	—19 26 19.6	—10.22
δ Ophiuchi	3	16 7 22.65	3.137	— 3 20 58.4	9.59
τ Herculis	3.4	16 15 44.53	1.798	+46 37 53.0	8.78
α Scorpii (<i>Antares</i>) . .	1.2	16 21 15.41	3.668	—26 8 1.3	8.40
η Draconis	3.2	16 22 12.31	0.823	+61 48 57.7	8.22
ζ Ophiuchi	3.2	16 29 50.26	3.298	—10 17 42.1	— 7.65
η Herculis	3	16 38 20.23	2.054	+39 10 37.0	7.06
κ Ophiuchi	3.4	16 51 22.40	2.834	+ 9 35 2.7	5.89
δ Herculis	5	16 56 41.65	+ 2.209	+33 45 45.9	— 5.44

MEAN PLACES FOR 1867.0.

Star's Name.	Magnitude.	Right Ascension.	An. Variation.	Declination.	An. Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
α^1 Herculis	var.	17 8 35.01	+ 2.733	+14 32 40.0	- 4.41
δ Ophiuchi (44) . . .	5	17 18 14.97	3.658	-24 2 59.4	3.75
β Draconis	3.2	17 27 25.65	1.350	+52 24 3.1	2.84
α Ophiuchi	2	17 28 45.66	2.782	+12 39 34.2	2.93
μ Herculis	3.4	17 41 15.25	2.345	+27 48 1.0	2.38
γ Draconis	2.3	17 53 31.22	1.393	+51 30 20.2	- 0.60
γ^2 Sagittarii	3.4	17 57 15.90	3.852	-30 25 21.1	- 0.47
μ^1 Sagittarii	4	18 5 48.58	3.586	-21 5 26.3	+ 0.50
η Serpentis	3	18 14 25.65	3.099	- 2 55 51.1	0.58
ι Aquilæ (3 H. Scuti)	4.5	18 27 58.11	3.264	- 8 20 4.4	2.11
α Lyrae (<i>Vega</i>) . . .	1	18 32 26.12	2.032	+38 39 42.0	+ 3.11
β Lyrae	var.	18 45 10.17	2.214	+33 12 35.4	3.90
σ Sagittarii	2.3	18 47 1.05	3.724	-26 27 31.0	4.00
ζ Aquilæ	3	18 59 17.77	2.755	+13 40 5.4	5.06
d Sagittarii	5	19 9 51.15	3.515	-19 11 13.1	6.03
δ Aquilæ	3.4	19 18 47.49	3.025	+ 2 51 7.3	+ 6.86
κ Aquilæ	5	19 29 44.06	3.231	- 7 19 14.3	7.65
γ Aquilæ	3	19 39 56.17	2.853	+10 17 29.1	8.48
α Aquilæ (<i>Altair</i>) . .	1.2	19 44 17.60	2.928	+ 8 31 9.8	9.20
β Aquilæ	4	19 48 46.77	2.947	+ 6 4 36.3	8.68
τ Aquilæ	6.5	19 57 38.61	2.935	+ 6 54 16.8	+ 9.86
α^2 Capricorni	3.4	20 10 40.37	3.334	-12 57 16.8	10.83
α Pavonis	2	20 15 6.80	4.797	-57 9 27.0	11.12
π Capricorni	5	20 19 42.33	3.442	-18 38 42.6	11.50
ϵ Delphini	4	20 26 51.49	2.866	+10 51 10.8	11.99
α Cygni	2.1	20 36 53.88	2.044	+44 48 22.9	+12.68
μ Aquarii	5.4	20 45 28.65	3.241	- 9 28 49.1	13.21
ν Cygni	4	20 52 12.91	2.234	+40 39 23.1	13.70
61^1 Cygni	5.6	21 0 55.92	2.673	+38 5 48.4	17.46
ζ Cygni	3	21 7 16.58	2.550	+29 40 57.6	14.55
α Cephei	3.2	21 15 24.20	1.438	+62 1 20.7	+15.10
ι Pegasi	4.5	21 15 56.23	2.775	+19 14 14.1	15.22
β Aquarii	3	21 24 33.34	3.165	- 6 9 16.9	15.62
ξ Aquarii	5.4	21 30 40.17	3.199	- 8 26 56.9	15.91
ϵ Pegasi	2.3	21 37 39.24	2.948	+ 9 15 59.7	16.31
μ Capricorni	5	21 46 2.57	3.281	-14 10 35.0	+16.74
α Aquarii	3	21 58 57.11	3.084	- 0 57 52.8	17.32
α Gruis	2	21 59 50.30	3.816	-47 36 11.5	17.18
θ Aquarii	4.5	22 9 48.83	3.171	- 8 26 39.8	17.75
π Aquarii	5.4	22 18 29.05	3.065	+ 0 42 12.0	18.11
η Aquarii	4.3	22 28 31.27	3.064	- 0 48 7.5	+18.42
ζ Pegasi	3.4	22 34 49.71	2.988	+10 8 16.7	18.69
λ Aquarii	4	22 45 40.40	3.131	- 8 17 11.8	19.04
α Pis. Aus. (<i>Fomalhaut</i>)	1.2	22 50 17.74	3.330	-30 19 34.8	18.97
α Pegasi (<i>Markab</i>) . .	2	22 58 8.23	2.984	+14 29 26.1	19.32
θ Piscium	4.5	23 21 13.29	3.041	+ 5 28 54.8	+19.71
ι Piscium	4.5	23 33 6.66	3.084	+ 4 54 20.1	19.47
α Piscium	4	23 52 28.97	+ 3.078	+ 6 7 36.8	+19.91

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 1 10	^m 88° 36'		^h 1 10	^m 88° 36'		^h 1 9	^m 88° 36'		^h 1 9	^m 88° 35'
1.3	49.33	18.4	1.2	22.30	18.2	1.1	62.21	13.1	1.0	51.94	64.0
2.3	48.57	18.5	2.2	21.42	18.2	2.1	61.59	12.8	2.0	51.81	63.6
3.3	47.78	18.6	3.2	20.51	18.1	3.1	60.97	12.6	3.0	51.73	63.3
4.3	46.94	18.7	4.2	19.59	18.0	4.1	60.33	12.3	4.0	51.70	62.9
5.3	46.06	18.8	5.2	18.65	17.8	5.1	59.72	12.1	5.0	51.75	62.6
6.3	45.12	18.9	6.2	17.75	17.7	6.1	59.15	11.8	6.0	51.84	62.2
7.2	44.15	19.0	7.2	16.90	17.5	7.1	58.64	11.5	7.0	51.99	61.9
8.2	43.15	19.1	8.2	16.10	17.3	8.1	58.20	11.1	8.0	52.14	61.6
9.2	42.15	19.1	9.2	15.35	17.1	9.1	57.82	10.8	9.0	52.28	61.3
10.2	41.18	19.1	10.2	14.65	16.9	10.1	57.49	10.5	10.0	52.40	61.0
11.2	40.25	19.1	11.2	13.99	16.8	11.1	57.19	10.2	11.0	52.49	60.8
12.2	39.38	19.1	12.2	13.35	16.6	12.1	56.88	10.0	12.0	52.53	60.5
13.2	38.55	19.1	13.1	12.60	16.5	13.1	56.56	9.7	13.0	52.57	60.2
14.2	37.75	19.1	14.1	11.99	16.3	14.1	56.21	9.5	14.0	52.60	59.9
15.2	36.98	19.1	15.1	11.26	16.2	15.1	55.81	9.2	15.0	52.64	59.6
16.2	36.18	19.1	16.1	10.48	16.0	16.1	55.40	8.9	16.0	52.73	59.2
17.2	35.37	19.1	17.1	9.60	15.8	17.1	54.97	8.6	17.0	52.89	58.9
18.2	34.51	19.1	18.1	8.89	15.6	18.1	54.54	8.3	18.0	53.12	58.5
19.2	33.60	19.1	19.1	8.07	15.4	19.1	54.16	8.0	19.0	53.42	58.2
20.2	32.64	19.1	20.1	7.30	15.2	20.1	53.83	7.7	20.0	53.76	57.9
21.2	31.65	19.1	21.1	6.59	14.9	21.1	53.57	7.3	21.0	54.14	57.6
22.2	30.65	19.1	22.1	5.95	14.7	22.0	53.37	7.0	22.0	54.50	57.3
23.2	29.69	19.0	23.1	5.38	14.4	23.0	53.22	6.6	23.0	54.85	57.0
24.2	28.73	18.9	24.1	4.83	14.2	24.0	53.12	6.3	24.0	55.18	56.8
25.2	27.82	18.8	25.1	4.33	13.9	25.0	53.04	6.0	25.0	55.46	56.6
26.2	26.98	18.7	26.1	3.84	13.7	26.0	52.95	5.7	25.9	55.72	56.3
27.2	26.19	18.6	27.1	3.32	13.5	27.0	52.84	5.5	26.9	55.97	56.0
28.2	25.42	18.5	28.1	2.79	13.3	28.0	52.71	5.2	27.9	56.21	55.8
29.2	24.68	18.4	29.1	2.21	13.1	29.0	52.52	4.9	28.9	56.50	55.5
30.2	23.91	18.4	30.1	1.59	12.8	30.0	52.33	4.6	29.9	56.82	55.1
31.2	23.12	18.3	31.1	0.97	12.6	31.0	52.13	4.3	30.9	57.21	54.8
32.2	22.30	18.2	32.1	0.33	12.3	32.0	51.94	4.0	31.9	57.67	54.5

APPARENT PLACES OF α URSÆ MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ₁ ^m ₉ 88° 35'			^h ₁ ^m ₁₀ 88° 35'			^h ₁ ^m ₁₀ 88° 35'			^h ₁ ^m ₁₁ 88° 35'	
1.9	57.67	54.5	1.9	17.01	48.1	1.8	42.36	46.6	1.7	8.70	50.1
2.9	58.17	54.2	2.8	17.86	48.0	2.8	43.19	46.7	2.7	9.41	50.3
3.9	58.72	54.0	3.8	18.67	47.9	3.8	44.00	46.8	3.7	10.15	50.5
4.9	59.30	53.7	4.8	19.43	47.8	4.8	44.78	46.8	4.7	10.93	50.6
5.9	59.86	53.5	5.8	20.14	47.8	5.8	45.55	46.9	5.7	11.75	50.8
6.9	60.39	53.3	6.8	20.85	47.7	6.8	46.35	46.9	6.7	12.60	51.0
7.9	60.91	53.0	7.8	21.54	47.6	7.8	47.19	46.9	7.7	13.48	51.2
8.9	61.38	52.8	8.8	22.26	47.4	8.7	48.08	46.9	8.7	14.36	51.4
9.9	61.83	52.6	9.8	23.01	47.3	9.7	49.03	46.9	9.7	15.21	51.7
10.9	62.26	52.4	10.8	23.80	47.2	10.7	49.99	47.0	10.7	16.01	51.9
11.9	62.69	52.2	11.8	24.65	47.1	11.7	51.00	47.1	11.7	16.76	52.2
12.9	63.17	51.9	12.8	25.56	47.0	12.7	51.98	47.2	12.7	17.44	52.5
13.9	63.70	51.6	13.8	26.49	46.9	13.7	52.94	47.3	13.7	18.09	52.8
14.9	64.29	51.4	14.8	27.45	46.8	14.7	53.85	47.5	14.6	18.70	53.0
15.9	64.94	51.1	15.8	28.38	46.8	15.7	54.70	47.6	15.6	19.29	53.3
16.9	65.62	50.9	16.8	29.29	46.7	16.7	55.50	47.7	16.6	19.92	53.5
17.9	66.37	50.7	17.8	30.16	46.7	17.7	56.28	47.8	17.6	20.57	53.7
18.9	67.12	50.5	18.8	30.97	46.7	18.7	57.02	48.0	18.6	21.26	53.9
19.9	67.85	50.3	19.8	31.74	46.7	19.7	57.78	48.0	19.6	22.00	54.1
20.9	68.55	50.1	20.8	32.50	46.7	20.7	58.57	48.1	20.6	22.75	54.4
21.9	69.22	50.0	21.8	33.25	46.7	21.7	59.39	48.2	21.6	23.54	54.7
22.9	69.83	49.8	22.8	34.04	46.6	22.7	60.27	48.3	22.6	24.31	55.0
23.9	70.42	49.7	23.8	34.85	46.6	23.7	61.19	48.5	23.6	25.04	55.3
24.9	70.99	49.5	24.8	35.72	46.5	24.7	62.13	48.6	24.6	25.72	55.6
25.9	71.58	49.3	25.8	36.65	46.5	25.7	63.09	48.8	25.6	26.34	55.9
26.9	72.21	49.1	26.8	37.60	46.5	26.7	64.02	49.0	26.6	26.90	56.2
27.9	72.89	48.9	27.8	38.59	46.5	27.7	64.92	49.2	27.6	27.42	56.5
28.9	73.63	48.7	28.8	39.59	46.5	28.7	65.77	49.4	28.6	27.91	56.8
29.9	74.44	48.6	29.8	40.56	46.5	29.7	66.55	49.6	29.6	28.39	57.1
30.9	75.29	48.4	30.8	41.48	46.6	30.7	67.30	49.8	30.6	28.89	57.4
31.9	76.16	48.3	31.8	42.36	46.6	31.7	68.01	49.9	31.6	29.43	57.7
32.9	77.01	48.1	32.8	43.19	46.7	32.7	68.70	50.1	32.6	30.02	57.9

APPARENT PLACES OF α URSE MINORIS, (*Polaris*), FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
"	^h ^m 1 11	88° 35'	"	^h ^m 1 11	88° 36'	"	^h ^m 1 11	88° 36'	"	^h ^m 1 11	88° 36'
1.6	30.02	57.9	1.5	41.94	8.3	1.4	42.09	20.0	1.3	29.20	29.8
2.6	30.64	58.2	2.5	42.25	8.7	2.4	41.80	20.4	2.3	29.46	30.1
3.6	31.28	58.5	3.5	42.52	9.1	3.4	41.47	20.8	3.3	27.73	30.3
4.6	31.93	58.8	4.5	42.73	9.5	4.4	41.12	21.2	4.3	27.02	30.6
5.6	32.54	59.2	5.5	42.89	9.9	5.4	40.74	21.5	5.3	26.34	30.8
6.6	33.12	59.5	6.5	42.98	10.4	6.4	40.38	21.9	6.3	25.71	31.0
7.6	33.65	59.9	7.5	43.02	10.7	7.4	40.02	22.2	7.3	25.11	31.2
8.6	34.11	60.3	8.5	43.03	11.1	8.4	39.71	22.5	8.3	24.52	31.4
9.6	34.52	60.6	9.5	43.03	11.5	9.4	39.44	22.8	9.3	23.94	31.7
10.6	34.89	61.0	10.5	43.05	11.9	10.4	39.18	23.1	10.3	23.32	31.9
11.6	35.22	61.3	11.5	43.09	12.2	11.4	38.94	23.5	11.3	22.67	32.2
12.6	35.57	61.6	12.5	43.17	12.5	12.4	38.70	23.8	12.3	21.96	32.4
13.6	35.93	61.9	13.5	43.29	12.9	13.4	38.41	24.2	13.3	21.18	32.7
14.6	36.33	62.3	14.5	43.43	13.2	14.4	38.06	24.6	14.3	20.36	32.9
15.6	36.79	62.6	15.5	43.58	13.6	15.4	37.66	24.9	15.3	19.51	33.1
16.6	37.27	62.9	16.5	43.68	14.0	16.4	37.18	25.3	16.3	18.63	33.3
17.6	37.78	63.2	17.5	43.76	14.4	17.4	36.67	25.6	17.3	17.77	33.5
18.6	38.28	63.6	18.5	43.77	14.8	18.4	36.11	26.0	18.3	16.93	33.6
19.6	38.73	64.0	19.5	43.72	15.2	19.4	35.53	26.3	19.3	16.12	33.8
20.5	39.13	64.3	20.5	43.60	15.6	20.4	34.97	26.6	20.3	15.35	33.9
21.5	39.48	64.7	21.5	43.46	16.0	21.4	34.44	26.8	21.3	14.61	34.0
22.5	39.75	65.1	22.5	43.27	16.4	22.4	33.95	27.1	22.3	13.90	34.2
23.5	39.98	65.5	23.5	43.09	16.8	23.4	33.51	27.4	23.3	13.20	34.3
24.5	40.17	65.9	24.5	42.92	17.1	24.4	33.06	27.7	24.3	12.47	34.5
25.5	40.34	66.3	25.5	42.78	17.5	25.4	32.65	28.0	25.3	11.69	34.7
26.5	40.55	66.6	26.4	42.68	17.8	26.4	32.20	28.3	26.3	10.87	34.9
27.5	40.77	67.0	27.4	42.62	18.1	27.4	31.72	28.6	27.3	9.97	35.0
28.5	41.02	67.3	28.4	42.56	18.5	28.4	31.18	28.9	28.3	9.04	35.2
29.5	41.31	67.6	29.4	42.51	18.9	29.4	30.57	29.2	29.3	8.07	35.3
30.5	41.60	68.0	30.4	42.41	19.2	30.4	29.90	29.5	30.3	7.08	35.4
31.5	41.94	68.3	31.4	42.27	19.6	31.3	29.20	29.8	31.3	6.13	35.5
32.5	42.25	68.7	32.4	42.09	20.0	32.3	28.46	30.1	32.3	5.22	35.6

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14		^h ^m 16 59	[°] ['] 82 14
0.9	31.78	65.6	1.8	34.85	56.5	1.8	39.13	52.8	1.7	44.03	54.6
1.9	31.82	65.3	2.8	34.98	56.2	2.8	39.29	52.7	2.7	44.18	54.7
2.9	31.89	64.9	3.8	35.12	56.0	3.8	39.46	52.7	3.7	44.33	54.9
3.9	31.92	64.6	4.8	35.27	55.7	4.8	39.64	52.6	4.7	44.47	55.1
4.9	31.97	64.3	5.8	35.42	55.5	5.8	39.81	52.6	5.7	44.61	55.3
5.9	32.04	63.9	6.8	35.58	55.3	6.7	39.99	52.6	6.7	44.74	55.5
6.9	32.10	63.5	7.8	35.73	55.2	7.7	40.16	52.6	7.7	44.87	55.8
7.9	32.18	63.2	8.8	35.89	55.0	8.7	40.33	52.7	8.7	44.98	56.0
8.9	32.27	62.8	9.8	36.03	54.9	9.7	40.47	52.7	9.7	45.10	56.2
9.9	32.36	62.5	10.8	36.18	54.8	10.7	40.65	52.8	10.7	45.22	56.3
10.9	32.46	62.2	11.8	36.32	54.6	11.7	40.80	52.8	11.7	45.33	56.5
11.0	32.55	61.8	12.8	36.45	54.5	12.7	40.95	52.8	12.7	45.45	56.7
12.9	32.64	61.6	13.8	36.60	54.3	13.7	41.10	52.9	13.6	45.58	56.8
13.9	32.73	61.4	14.8	36.74	54.2	14.7	41.25	52.9	14.6	45.71	57.0
14.9	32.82	61.1	15.8	36.89	54.0	15.7	41.41	52.9	15.6	45.85	57.2
15.9	32.90	60.8	16.8	37.04	53.9	16.7	41.57	52.9	16.6	45.98	57.5
16.9	32.99	60.5	17.8	37.20	53.7	17.7	41.74	53.0	17.6	46.10	57.7
17.9	33.08	60.2	18.8	37.37	53.5	18.7	41.91	53.0	18.6	46.21	58.0
18.9	33.17	59.9	19.8	37.54	53.4	19.7	42.08	53.0	19.6	46.32	58.3
19.9	33.28	59.6	20.8	37.71	53.3	20.7	42.25	53.1	20.6	46.42	58.6
20.9	33.38	59.3	21.8	37.88	53.2	21.7	42.42	53.2	21.6	46.51	58.8
21.9	33.50	59.0	22.8	38.04	53.2	22.7	42.57	53.4	22.6	46.60	59.1
22.9	33.62	58.7	23.8	38.21	53.1	23.7	42.72	53.5	23.6	46.69	59.4
23.9	33.74	58.4	24.8	38.36	53.1	24.7	42.87	53.6	24.6	46.78	59.6
24.9	33.87	58.2	25.8	38.51	53.1	25.7	43.01	53.8	25.6	46.87	59.8
25.9	34.01	58.0	26.8	38.66	53.0	26.7	43.14	53.9	26.6	46.97	60.0
26.9	34.13	57.8	27.8	38.81	52.9	27.7	43.28	54.0	27.6	47.06	60.3
27.9	34.25	57.6	28.8	38.97	52.9	28.7	43.43	54.1	28.6	47.16	60.5
28.8	34.37	57.4	29.8	39.13	52.8	29.7	43.57	54.2	29.6	47.26	60.8
29.8	34.49	57.1	30.8	39.29	52.7	30.7	43.72	54.3	30.6	47.35	61.1
30.8	34.60	56.9	31.8	39.46	52.7	31.7	43.87	54.4	31.6	47.44	61.4
31.8	34.73	56.7	32.8	39.64	52.6	32.7	44.03	54.6	32.6	47.52	61.7

APPARENT PLACES OF ϵ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ₁₆ ^m ₅₉	[°] ₈₂ ['] ₁₅		^h ₁₆ ^m ₅₉	[°] ₈₂ ['] ₁₅		^h ₁₆ ^m ₅₉	[°] ₈₂ ['] ₁₅		^h ₁₆ ^m ₅₉	[°] ₈₂ ['] ₁₅
1.6	^s _{47.44}	^s _{1.4}	1.5	^s _{48.55}	^s _{11.2}	1.4	^s _{47.09}	^s _{20.3}	1.3	^s _{43.42}	^s _{26.9}
2.6	47.52	1.7	2.5	48.52	11.5	2.4	47.00	20.5	2.3	43.29	27.1
3.6	47.60	2.0	3.5	48.50	11.8	3.4	46.91	20.7	3.3	43.15	27.2
4.6	47.66	2.4	4.5	48.48	12.1	4.4	46.82	21.0	4.3	43.01	27.4
5.6	47.71	2.7	5.5	48.46	12.4	5.4	46.74	21.2	5.3	42.87	27.5
6.6	47.76	3.0	6.5	48.44	12.7	6.4	46.65	21.4	6.3	42.72	27.7
7.6	47.81	3.3	7.5	48.42	13.0	7.4	46.57	21.7	7.3	42.56	27.9
8.6	47.87	3.6	8.5	48.41	13.3	8.4	46.48	22.0	8.3	42.40	28.1
9.6	47.92	3.8	9.5	48.40	13.6	9.4	46.38	22.2	9.3	42.23	28.2
10.6	47.98	4.1	10.5	48.38	13.9	10.4	46.28	22.5	10.3	42.06	28.3
11.6	48.05	4.3	11.5	48.35	14.2	11.4	46.16	22.8	11.3	41.89	28.4
12.6	48.11	4.6	12.5	48.32	14.6	12.4	46.04	23.1	12.3	41.72	28.5
13.6	48.17	4.9	13.5	48.28	14.9	13.4	45.92	23.3	13.3	41.56	28.6
14.6	48.23	5.2	14.5	48.23	15.3	14.4	45.79	23.6	14.3	41.40	28.6
15.6	48.27	5.6	15.5	48.17	15.6	15.4	45.67	23.8	15.3	41.24	28.7
16.6	48.31	6.0	16.5	48.11	15.9	16.4	45.55	24.0	16.3	41.09	28.8
17.6	48.35	6.3	17.5	48.05	16.2	17.4	45.43	24.1	17.3	40.94	28.8
18.5	48.37	6.7	18.5	47.99	16.5	18.4	45.31	24.3	18.3	40.78	28.9
19.5	48.39	7.0	19.5	47.94	16.8	19.4	45.20	24.5	19.3	40.62	29.0
20.5	48.41	7.3	20.5	47.88	17.0	20.4	45.09	24.7	20.3	40.45	29.2
21.5	48.42	7.6	21.5	47.83	17.3	21.4	44.97	24.9	21.3	40.30	29.3
22.5	48.44	7.9	22.5	47.78	17.6	22.4	44.85	25.1	22.3	40.12	29.3
23.5	48.46	8.2	23.4	47.73	17.9	23.4	44.72	25.4	23.3	39.92	29.4
24.5	48.48	8.5	24.4	47.67	18.2	24.4	44.59	25.6	24.3	39.73	29.5
25.5	48.50	8.8	25.4	47.61	18.5	25.4	44.45	25.8	25.3	39.55	29.5
26.5	48.53	9.1	26.4	47.54	18.8	26.4	44.30	26.0	26.3	39.37	29.5
27.5	48.55	9.4	27.4	47.46	19.1	27.4	44.15	26.2	27.3	39.20	29.5
28.5	48.56	9.7	28.4	47.38	19.4	28.4	44.00	26.4	28.3	39.03	29.5
29.5	48.57	10.1	29.4	47.28	19.7	29.4	43.85	26.5	29.3	38.87	29.5
30.5	48.57	10.5	30.4	47.19	20.0	30.4	43.70	26.7	30.3	38.71	29.5
31.5	48.56	10.8	31.4	47.09	20.3	31.3	43.56	26.8	31.3	38.54	29.5
32.5	48.55	11.2	32.4	47.00	20.5	32.3	43.42	26.9	32.3	38.38	29.6

APPARENT PLACES OF ϵ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 15		^h ^m 16 59	[°] ['] 82 15
1.3	38.38	29.6	1.2	33.13	27.6	1.1	28.51	21.1	1.0	25.99	11.4
2.3	38.21	29.6	2.2	32.95	27.5	2.1	28.38	20.8	2.0	25.96	11.0
3.3	38.03	29.6	3.2	32.77	27.4	3.1	28.26	20.5	3.0	25.93	10.6
4.3	37.84	29.7	4.2	32.60	27.2	4.1	28.15	20.2	4.0	25.91	10.2
5.2	37.66	29.7	5.2	32.42	27.1	5.1	28.04	19.8	5.0	25.89	9.9
6.2	37.47	29.7	6.2	32.25	26.9	6.1	27.94	19.5	6.0	25.87	9.5
7.2	37.28	29.7	7.2	32.08	26.6	7.1	27.85	19.2	7.0	25.85	9.2
8.2	37.09	29.6	8.2	31.93	26.4	8.1	27.75	18.9	8.0	25.82	8.9
9.2	36.91	29.5	9.2	31.78	26.2	9.1	27.65	18.6	9.0	25.80	8.6
10.2	36.74	29.5	10.2	31.63	26.0	10.1	27.55	18.4	10.0	25.77	8.2
11.2	36.57	29.4	11.2	31.49	25.9	11.1	27.45	18.1	11.0	25.74	7.9
12.2	36.40	29.3	12.2	31.34	25.7	12.1	27.35	17.8	12.0	25.72	7.5
13.2	36.24	29.3	13.1	31.19	25.5	13.1	27.25	17.5	13.0	25.70	7.1
14.2	36.07	29.2	14.1	31.04	25.4	14.1	27.14	17.2	14.0	25.70	6.7
15.2	35.90	29.2	15.1	30.88	25.2	15.1	27.04	16.9	15.0	25.70	6.3
16.2	35.72	29.1	16.1	30.72	25.0	16.1	26.95	16.5	16.0	25.71	5.9
17.2	35.55	29.1	17.1	30.55	24.8	17.0	26.86	16.2	17.0	25.73	5.5
18.2	35.36	29.1	18.1	30.39	24.6	18.0	26.78	15.8	18.0	25.75	5.2
19.2	35.18	29.0	19.1	30.24	24.4	19.0	26.72	15.5	19.0	25.77	4.8
20.2	34.99	29.0	20.1	30.09	24.1	20.0	26.66	15.1	20.0	25.80	4.5
21.2	34.80	28.8	21.1	29.95	23.8	21.0	26.60	14.8	21.0	25.82	4.2
22.2	34.62	28.7	22.1	29.81	23.5	22.0	26.54	14.4	22.0	25.84	3.8
23.2	34.44	28.6	23.1	29.68	23.3	23.0	26.48	14.1	23.0	25.85	3.5
24.2	34.27	28.4	24.1	29.56	23.0	24.0	26.41	13.8	23.9	25.87	3.2
25.2	34.11	28.3	25.1	29.44	22.8	25.0	26.34	13.5	24.9	25.89	2.8
26.2	33.95	28.2	26.1	29.31	22.6	26.0	26.28	13.2	25.9	25.91	2.5
27.2	33.79	28.0	27.1	29.18	22.3	27.0	26.21	12.9	26.9	25.94	2.1
28.2	33.63	27.9	28.1	29.05	22.1	28.0	26.14	12.5	27.9	25.97	1.7
29.2	33.47	27.9	29.1	28.91	21.9	29.0	26.08	12.2	28.9	26.02	1.3
30.2	33.30	27.7	30.1	28.77	21.6	30.0	26.03	11.8	29.9	26.08	0.9
31.2	33.13	27.6	31.1	28.64	21.4	31.0	25.99	11.4	30.9	26.14	0.6
32.2	32.95	27.5	32.1	28.51	21.1	32.0	25.96	11.0	31.9	26.20	0.2

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 18 14	[°] ['] 86° 36'		^h ^m 18 14	[°] ['] 86° 36'		^h ^m 18 15	[°] ['] 86° 36'		^h ^m 18 15	[°] ['] 86° 36'
	^s	["]		^s	["]		^s	["]		^s	["]
1.0	52.71	23.8	1.9	55.89	13.6	1.8	3.74	7.6	1.7	14.88	6.1
2.0	52.69	23.5	2.9	56.08	13.2	2.8	4.06	7.4	2.7	15.26	6.2
3.0	52.66	23.2	3.9	56.29	12.9	3.8	4.40	7.2	3.7	15.66	6.2
4.0	52.64	22.8	4.9	56.52	12.6	4.8	4.77	7.1	4.7	16.05	6.3
5.0	52.61	22.5	5.9	56.78	12.3	5.8	5.14	6.9	5.7	16.42	6.5
6.0	52.60	22.1	6.9	57.03	12.1	6.8	5.53	6.8	6.7	16.77	6.6
7.0	52.61	21.7	7.9	57.31	11.8	7.8	5.91	6.7	7.7	17.11	6.7
8.0	52.65	21.4	8.9	57.60	11.6	8.8	6.29	6.7	8.7	17.42	6.8
9.0	52.71	21.0	9.9	57.86	11.4	9.8	6.66	6.6	9.7	17.74	6.9
10.0	52.79	20.6	10.9	58.13	11.2	10.8	7.02	6.5	10.7	18.05	7.0
11.0	52.88	20.3	11.9	58.38	11.0	11.8	7.35	6.5	11.7	18.36	7.1
11.9	52.97	20.0	12.9	58.62	10.8	12.8	7.68	6.4	12.7	18.68	7.2
12.9	53.07	19.6	13.9	58.87	10.5	13.8	8.01	6.4	13.7	19.01	7.3
13.9	53.17	19.4	14.9	59.10	10.3	14.8	8.33	6.3	14.7	19.37	7.4
14.9	53.26	19.1	15.9	59.36	10.1	15.8	8.67	6.2	15.7	19.72	7.5
15.9	53.34	18.8	16.9	59.62	9.8	16.8	9.03	6.1	16.7	20.07	7.6
16.9	53.41	18.5	17.8	59.91	9.6	17.8	9.40	6.1	17.7	20.43	7.8
17.9	53.50	18.1	18.8	60.23	9.3	18.8	9.79	6.0	18.7	20.77	8.0
18.9	53.58	17.8	19.8	60.56	9.1	19.8	10.18	5.9	19.7	21.11	8.2
19.9	53.67	17.4	20.8	60.88	8.9	20.8	10.59	5.9	20.7	21.42	8.4
20.9	53.78	17.1	21.8	61.23	8.7	21.8	10.98	5.9	21.7	21.71	8.6
21.9	53.92	16.7	22.8	61.57	8.6	22.8	11.37	5.9	22.7	21.97	8.8
22.9	54.08	16.4	23.8	61.91	8.4	23.8	11.74	6.0	23.7	22.24	8.9
23.9	54.25	16.1	24.8	62.23	8.3	24.8	12.10	6.0	24.7	22.51	9.1
24.9	54.45	15.8	25.8	62.53	8.2	25.7	12.43	6.0	25.7	22.77	9.3
25.9	54.66	15.5	26.8	62.83	8.1	26.7	12.77	6.1	26.7	23.05	9.4
26.9	54.85	15.2	27.8	63.13	7.9	27.7	13.10	6.1	27.7	23.35	9.6
27.9	55.04	14.9	28.8	63.42	7.7	28.7	13.43	6.1	28.7	23.65	9.7
28.9	55.22	14.7	29.8	63.74	7.6	29.7	13.77	6.1	29.7	23.95	9.9
29.9	55.38	14.4	30.8	64.06	7.4	30.7	14.12	6.1	30.7	24.24	10.1
30.9	55.55	14.2	31.8	64.40	7.2	31.7	14.50	6.1	31.6	24.54	10.4
31.9	55.72	13.9	32.8	64.77	7.1	32.7	14.88	6.1	32.6	24.82	10.6

APPARENT PLACES OF δ URSAE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 1 15	86° 36'		^h ^m 1 15	86° 36'		^h ^m 1 15	86° 36'		^h ^m 1 15	86° 36'
1.6	^s 24.54	["] 10.4	1.6	^s 30.10	["] 18.9	1.5	^s 29.77	["] 28.4	1.4	^s 23.75	["] 37.1
2.6	24.82	10.6	2.6	30.15	19.2	2.5	29.64	28.7	2.4	23.49	37.3
3.6	25.09	10.9	3.6	30.21	19.5	3.5	29.50	29.0	3.4	23.24	37.6
4.6	25.33	11.1	4.6	30.24	19.8	4.5	29.38	29.3	4.4	23.00	37.8
5.6	25.56	11.4	5.6	30.28	20.1	5.5	29.28	29.5	5.4	22.74	38.0
6.6	25.77	11.7	6.6	30.33	20.4	6.5	29.18	29.8	6.4	22.46	38.3
7.6	25.97	11.9	7.5	30.39	20.7	7.5	29.06	30.1	7.4	22.17	38.6
8.6	26.17	12.1	8.5	30.46	20.9	8.5	28.95	30.4	8.4	21.85	38.8
9.6	26.37	12.3	9.5	30.52	21.2	9.5	28.83	30.8	9.4	21.51	39.1
10.6	26.58	12.5	10.5	30.59	21.6	10.5	28.70	31.1	10.4	21.18	39.3
11.6	26.80	12.8	11.5	30.66	21.9	11.5	28.54	31.4	11.4	20.82	39.5
12.6	27.04	13.0	12.5	30.70	22.2	12.5	28.36	31.8	12.4	20.47	39.7
13.6	27.27	13.2	13.5	30.72	22.6	13.4	28.16	32.1	13.4	20.12	39.9
14.6	27.50	13.5	14.5	30.73	23.0	14.4	27.94	32.4	14.4	19.78	40.0
15.6	27.74	13.8	15.5	30.70	23.3	15.4	27.72	32.7	15.4	19.47	40.2
16.6	27.93	14.1	16.5	30.66	23.7	16.4	27.52	32.9	16.4	19.15	40.4
17.6	28.11	14.4	17.5	30.62	24.0	17.4	27.31	33.2	17.4	18.84	40.5
18.6	28.28	14.7	18.5	30.56	24.3	18.4	27.11	33.4	18.4	18.53	40.7
19.6	28.42	15.0	19.5	30.51	24.6	19.4	26.92	33.7	19.3	18.21	40.9
20.6	28.56	15.3	20.5	30.47	24.8	20.4	26.72	33.9	20.3	17.88	41.2
21.6	28.68	15.6	21.5	30.44	25.1	21.4	26.54	34.2	21.3	17.52	41.4
22.6	28.80	15.9	22.5	30.43	25.4	22.4	26.35	34.5	22.3	17.16	41.6
23.6	28.92	16.1	23.5	30.40	25.7	23.4	26.16	34.8	23.3	16.76	41.8
24.6	29.06	16.4	24.5	30.38	26.0	24.4	25.94	35.1	24.3	16.37	41.9
25.6	29.21	16.6	25.5	30.36	26.4	25.4	25.71	35.4	25.3	15.97	42.1
26.6	29.37	16.9	26.5	30.31	26.7	26.4	25.44	35.7	26.3	15.57	42.2
27.6	29.52	17.2	27.5	30.25	27.1	27.4	25.16	36.0	27.3	15.17	42.3
28.6	29.67	17.5	28.5	30.16	27.5	28.4	24.87	36.2	28.3	14.79	42.4
29.6	29.81	17.8	29.5	30.04	27.8	29.4	24.57	36.5	29.3	14.43	42.5
30.6	29.93	18.2	30.5	29.91	28.1	30.4	24.29	36.7	30.3	14.07	42.7
31.6	30.03	18.5	31.5	29.77	28.4	31.4	24.01	36.9	31.3	13.71	42.8
32.6	30.10	18.9	32.5	29.64	28.7	32.4	23.75	37.1	32.3	13.37	42.9

APPARENT PLACES OF δ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h 1 15	^m 36° 36'		^h 1 14	^m 36° 36'		^h 1 14	^m 36° 36'		^h 1 14	^m 36° 36'
1.3	13.37	42.9	1.2	61.02	44.6	1.1	48.38	41.7	1.1	39.14	34.5
2.3	13.00	43.1	2.2	60.58	44.6	2.1	47.97	41.5	2.1	38.92	34.1
3.3	12.63	43.2	3.2	60.13	44.6	3.1	47.59	41.3	3.1	38.73	33.8
4.3	12.24	43.4	4.2	59.67	44.6	4.1	47.22	41.1	4.1	38.54	33.5
5.3	11.82	43.5	5.2	59.21	44.6	5.1	46.87	40.8	5.1	38.38	33.2
6.3	11.38	43.7	6.2	58.76	44.5	6.1	46.54	40.6	6.1	38.21	32.9
7.3	10.94	43.8	7.2	58.31	44.4	7.1	46.21	40.4	7.0	38.06	32.6
8.3	10.51	43.8	8.2	57.89	44.3	8.1	45.90	40.2	8.0	37.87	32.3
9.3	19.07	43.9	9.2	57.49	44.2	9.1	45.60	40.0	9.0	37.69	32.0
10.3	9.65	43.9	10.2	57.10	44.1	10.1	45.27	39.8	10.0	37.49	31.8
11.3	9.26	44.0	11.2	56.71	44.1	11.1	44.94	39.6	11.0	37.30	31.5
12.3	8.87	44.0	12.2	56.32	44.0	12.1	44.60	39.5	12.0	37.11	31.2
13.3	8.49	44.1	13.2	55.93	44.0	13.1	44.24	39.3	13.0	36.92	30.8
14.3	8.11	44.1	14.2	55.54	43.9	14.1	43.89	39.0	14.0	36.75	30.4
15.3	7.74	44.2	15.2	55.13	43.9	15.1	43.53	38.8	15.0	36.60	30.1
16.3	7.35	44.3	16.2	54.70	43.8	16.1	43.20	38.5	16.0	36.48	29.7
17.3	6.94	44.4	17.2	54.25	43.8	17.1	42.86	38.3	17.0	36.38	29.3
18.3	6.51	44.5	18.2	53.82	43.7	18.1	42.56	38.0	18.0	36.29	29.0
19.3	6.07	44.6	19.2	53.38	43.5	19.1	42.28	37.7	19.0	36.22	28.7
20.3	5.62	44.6	20.2	52.95	43.4	20.1	42.02	37.4	20.0	36.15	28.3
21.3	5.16	44.6	21.2	52.54	43.2	21.1	41.76	37.1	21.0	36.07	28.0
22.3	4.71	44.6	22.2	52.15	43.1	22.1	41.52	36.9	22.0	35.99	27.7
23.3	4.27	44.6	23.2	51.77	42.9	23.1	41.28	36.6	23.0	35.90	27.4
24.3	3.84	44.6	24.2	51.40	42.7	24.1	41.03	36.4	24.0	35.79	27.1
25.3	3.42	44.6	25.2	51.05	42.6	25.1	40.77	36.2	25.0	35.69	26.8
26.3	3.03	44.6	26.2	50.70	42.5	26.1	40.49	35.9	26.0	35.60	26.4
27.3	2.63	44.6	27.2	50.34	42.4	27.1	40.21	35.7	27.0	35.52	26.1
28.3	2.24	44.6	28.2	49.97	42.2	28.1	39.93	35.4	28.0	35.46	25.7
29.3	1.85	44.6	29.2	49.59	42.1	29.1	39.65	35.1	29.0	35.41	25.3
30.3	1.45	44.6	30.2	49.18	42.0	30.1	39.39	34.8	30.0	35.40	24.9
31.3	1.02	44.6	31.2	48.78	41.9	31.1	39.14	34.5	31.0	35.39	24.6
32.3	0.58	44.6	32.1	48.38	41.7	32.1	38.92	34.1	32.0	35.40	24.2

APPARENT PLACES OF λ URSE MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	JANUARY.		Mean Solar Date.	FEBRUARY.		Mean Solar Date.	MARCH.		Mean Solar Date.	APRIL.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
	^h ₁₉ ^m ₅₆	[°] ₈₈ ['] ₅₄		^h ₁₉ ^m ₅₆	[°] ₈₈ ['] ₅₄		^h ₁₉ ^m ₅₆	[°] ₈₈ ['] ₅₄		^h ₁₉ ^m ₅₆	[°] ₈₈ ['] ₅₄
1.1	^s _{22.79}	["] _{50.6}	1.0	^s _{15.90}	["] _{40.7}	1.9	^s _{28.93}	["] _{32.1}	1.8	^s _{57.96}	["] _{26.6}
2.1	^s _{22.26}	["] _{50.3}	2.0	^s _{16.02}	["] _{40.4}	2.9	^s _{29.59}	["] _{31.8}	2.8	^s _{59.14}	["] _{26.5}
3.1	^s _{21.69}	["] _{50.0}	3.0	^s _{16.07}	["] _{40.0}	3.9	^s _{30.30}	["] _{31.5}	3.8	^s _{60.35}	["] _{26.4}
4.1	^s _{21.10}	["] _{49.8}	4.0	^s _{16.19}	["] _{39.7}	4.9	^s _{31.08}	["] _{31.2}	4.8	^s _{61.58}	["] _{26.3}
5.0	^s _{20.50}	["] _{49.5}	5.0	^s _{16.39}	["] _{39.3}	5.9	^s _{31.93}	["] _{31.0}	5.8	^s _{62.78}	["] _{26.3}
6.0	^s _{19.91}	["] _{49.1}	6.0	^s _{16.66}	["] _{38.9}	6.9	^s _{32.86}	["] _{30.7}	6.8	^s _{63.94}	["] _{26.3}
7.0	^s _{19.36}	["] _{48.8}	7.0	^s _{17.01}	["] _{38.6}	7.9	^s _{33.81}	["] _{30.5}	7.8	^s _{65.05}	["] _{26.2}
8.0	^s _{18.89}	["] _{48.4}	8.0	^s _{17.43}	["] _{38.3}	8.9	^s _{34.77}	["] _{30.3}	8.8	^s _{66.11}	["] _{26.2}
9.0	^s _{18.50}	["] _{48.1}	8.9	^s _{17.86}	["] _{38.0}	9.9	^s _{35.71}	["] _{30.2}	9.8	^s _{67.11}	["] _{26.2}
10.0	^s _{18.18}	["] _{47.7}	9.9	^s _{18.31}	["] _{37.7}	10.9	^s _{36.60}	["] _{29.9}	10.8	^s _{68.09}	["] _{26.2}
11.0	^s _{17.93}	["] _{47.4}	10.9	^s _{18.72}	["] _{37.4}	11.9	^s _{37.45}	["] _{29.7}	11.8	^s _{69.09}	["] _{26.2}
12.0	^s _{17.73}	["] _{47.1}	11.9	^s _{19.12}	["] _{37.1}	12.9	^s _{38.27}	["] _{29.6}	12.8	^s _{70.08}	["] _{26.1}
13.0	^s _{17.56}	["] _{46.8}	12.9	^s _{19.48}	["] _{36.8}	13.9	^s _{39.06}	["] _{29.4}	13.8	^s _{71.15}	["] _{26.0}
14.0	^s _{17.38}	["] _{46.5}	13.9	^s _{19.81}	["] _{36.6}	14.9	^s _{39.86}	["] _{29.2}	14.8	^s _{72.26}	["] _{26.0}
15.0	^s _{17.16}	["] _{46.2}	14.9	^s _{20.13}	["] _{36.3}	15.9	^s _{40.68}	["] _{29.0}	15.8	^s _{73.42}	["] _{26.0}
16.0	^s _{16.90}	["] _{45.0}	15.9	^s _{20.46}	["] _{36.0}	16.8	^s _{41.55}	["] _{28.8}	16.8	^s _{74.65}	["] _{26.0}
17.0	^s _{16.61}	["] _{45.6}	16.9	^s _{20.83}	["] _{35.6}	17.8	^s _{42.48}	["] _{28.6}	17.8	^s _{75.88}	["] _{26.0}
18.0	^s _{16.30}	["] _{45.3}	17.9	^s _{21.27}	["] _{35.3}	18.8	^s _{43.47}	["] _{28.4}	18.8	^s _{77.11}	["] _{26.0}
19.0	^s _{16.00}	["] _{45.0}	18.9	^s _{21.79}	["] _{35.0}	19.8	^s _{44.53}	["] _{28.2}	19.8	^s _{78.32}	["] _{26.0}
20.0	^s _{15.76}	["] _{44.7}	19.9	^s _{22.38}	["] _{34.6}	20.8	^s _{45.62}	["] _{28.0}	20.8	^s _{79.47}	["] _{26.1}
21.0	^s _{15.55}	["] _{44.3}	20.9	^s _{23.04}	["] _{34.3}	21.8	^s _{46.75}	["] _{27.9}	21.7	^s _{80.55}	["] _{26.2}
22.0	^s _{15.42}	["] _{43.9}	21.9	^s _{23.74}	["] _{34.0}	22.8	^s _{47.87}	["] _{27.7}	22.7	^s _{81.59}	["] _{26.2}
23.0	^s _{15.36}	["] _{43.6}	22.9	^s _{24.47}	["] _{33.8}	23.8	^s _{48.97}	["] _{27.6}	23.7	^s _{82.56}	["] _{26.3}
24.0	^s _{15.36}	["] _{43.2}	23.9	^s _{25.19}	["] _{33.5}	24.8	^s _{50.02}	["] _{27.5}	24.7	^s _{83.53}	["] _{26.4}
25.0	^s _{15.43}	["] _{42.8}	24.0	^s _{25.87}	["] _{33.3}	25.8	^s _{51.02}	["] _{27.4}	25.7	^s _{84.49}	["] _{26.4}
26.0	^s _{15.53}	["] _{42.5}	25.0	^s _{26.52}	["] _{33.1}	26.8	^s _{51.97}	["] _{27.3}	26.7	^s _{85.48}	["] _{26.4}
27.0	^s _{15.65}	["] _{42.2}	26.9	^s _{27.14}	["] _{32.8}	27.8	^s _{52.90}	["] _{27.2}	27.7	^s _{86.52}	["] _{26.5}
28.0	^s _{15.78}	["] _{41.9}	27.9	^s _{27.73}	["] _{32.6}	28.8	^s _{53.83}	["] _{27.1}	28.7	^s _{87.61}	["] _{26.5}
29.0	^s _{15.88}	["] _{41.6}	28.9	^s _{28.33}	["] _{32.3}	29.8	^s _{54.78}	["] _{27.0}	29.7	^s _{88.75}	["] _{26.5}
30.0	^s _{15.95}	["] _{41.3}	29.9	^s _{28.93}	["] _{32.1}	30.8	^s _{55.79}	["] _{26.8}	30.7	^s _{89.93}	["] _{26.6}
31.0	^s _{15.98}	["] _{41.0}	30.9	^s _{29.59}	["] _{31.8}	31.8	^s _{56.84}	["] _{26.7}	31.7	^s _{91.10}	["] _{26.7}
32.0	^s _{15.99}	["] _{40.7}	31.9	^s _{30.30}	["] _{31.5}	32.8	^s _{57.96}	["] _{26.6}	32.7	^s _{92.26}	["] _{26.8}

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	MAY.		Mean Solar Date.	JUNE.		Mean Solar Date.	JULY.		Mean Solar Date.	AUGUST.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 57	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54		^h ^m 19 58	[°] ['] 88 54		^h ^m 19 57	[°] ['] 88 54
1.7	31.10	26.7	1.6	58.80	32.3	1.6	11.29	41.0	1.5	66.52	51.2
2.7	32.26	26.8	2.6	59.41	32.6	2.6	11.30	41.3	2.5	66.10	51.5
3.7	33.37	27.0	3.6	59.95	32.8	3.6	11.32	41.6	3.5	65.74	51.8
4.7	34.42	27.1	4.6	60.46	33.1	4.6	11.37	41.9	4.5	65.38	52.1
5.7	35.41	27.3	5.6	60.98	33.3	5.5	11.45	42.2	5.5	65.02	52.4
6.7	36.34	27.4	6.6	61.49	33.5	6.5	11.57	42.5	6.5	64.61	52.7
7.7	37.22	27.6	7.6	62.04	33.8	7.5	11.71	42.8	7.5	64.15	53.1
8.7	38.08	27.7	8.6	62.64	34.0	8.5	11.85	43.1	8.5	63.61	53.4
9.7	38.96	27.8	9.6	63.26	34.2	9.5	11.98	43.5	9.4	63.01	53.8
10.7	39.87	27.9	10.6	63.93	34.5	10.5	12.06	43.9	10.4	62.44	54.1
11.7	40.82	28.0	11.6	64.58	34.8	11.5	12.08	44.2	11.4	61.63	54.5
12.7	41.81	28.1	12.6	65.21	35.1	12.5	12.03	44.6	12.4	60.90	54.8
13.7	42.84	28.3	13.6	65.78	35.4	13.5	11.91	45.0	13.4	60.17	55.1
14.7	43.89	28.4	14.6	66.28	35.7	14.5	11.71	45.3	14.4	59.47	55.3
15.7	44.94	28.6	15.6	66.71	36.0	15.5	11.48	45.6	15.4	58.79	55.6
16.7	45.96	28.8	16.6	67.07	36.3	16.5	11.22	46.0	16.4	58.15	55.9
17.7	46.92	29.0	17.6	67.37	36.7	17.5	10.98	46.3	17.4	57.53	56.1
18.7	47.82	29.2	18.6	67.66	37.0	18.5	10.77	46.6	18.4	56.93	56.4
19.7	48.65	29.4	19.6	67.93	37.2	19.5	10.60	46.9	19.4	56.33	56.7
20.7	49.42	29.7	20.6	68.22	37.5	20.5	10.46	47.2	20.4	55.69	57.1
21.7	50.15	29.9	21.6	68.55	37.8	21.5	10.36	47.5	21.4	55.00	57.4
22.7	50.85	30.1	22.6	68.90	38.0	22.5	10.24	47.8	22.4	54.24	57.7
23.7	51.56	30.2	23.6	69.28	38.3	23.5	10.10	48.2	23.4	53.40	58.0
24.7	52.31	30.4	24.6	69.70	38.6	24.5	9.91	48.5	24.4	52.50	58.3
25.7	53.10	30.6	25.6	70.09	38.9	25.5	9.66	48.9	25.4	51.55	58.6
26.7	53.92	30.8	26.6	70.46	39.3	26.5	9.33	49.3	26.4	50.60	58.9
27.7	54.78	31.0	27.6	70.76	39.6	27.5	8.93	49.6	27.4	49.65	59.1
28.6	55.65	31.2	28.6	71.00	40.0	28.5	8.45	50.0	28.4	48.75	59.4
29.6	56.53	31.5	29.6	71.16	40.4	29.5	7.96	50.3	29.4	47.88	59.6
30.6	57.36	31.7	30.6	71.25	40.7	30.5	7.45	50.6	30.4	47.04	59.9
31.6	58.12	32.0	31.6	71.29	41.0	31.5	6.97	50.9	31.4	46.25	60.1
32.6	58.80	32.3	32.6	71.30	41.3	32.5	6.52	51.2	32.4	45.45	60.4

APPARENT PLACES OF λ URSÆ MINORIS, FOR THE UPPER TRANSIT
AT WASHINGTON.

Mean Solar Date.	SEPTEMBER.		Mean Solar Date.	OCTOBER.		Mean Solar Date.	NOVEMBER.		Mean Solar Date.	DECEMBER.	
	Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.		Right Ascen- sion.	Declina- tion North.
	^h ^m 19 57	[°] ['] 88 55		^h ^m 19 56	[°] ['] 88 55		^h ^m 19 55	[°] ['] 88 55		^h ^m 19 55	[°] ['] 88 54
1.4	45.45	0.4	1.3	72.85	6.6	1.2	92.49	8.9	1.1	55.42	66.1
2.4	44.64	0.6	2.3	71.62	6.8	2.2	91.06	8.9	2.1	54.27	65.9
3.4	43.80	0.9	3.3	70.32	7.0	3.2	89.64	8.9	3.1	53.20	65.7
4.4	42.88	1.2	4.3	68.98	7.2	4.2	88.26	8.8	4.1	52.20	65.5
5.4	41.80	1.5	5.3	67.61	7.3	5.2	86.94	8.7	5.1	51.29	65.2
6.4	40.84	1.8	6.3	66.22	7.4	6.2	85.67	8.6	6.1	50.38	65.0
7.4	39.72	2.0	7.3	64.84	7.5	7.2	84.46	8.6	7.1	49.48	64.9
8.4	38.59	2.3	8.3	63.52	7.6	8.2	83.30	8.5	8.1	48.56	64.7
9.4	37.45	2.5	9.3	62.24	7.7	9.2	82.14	8.5	9.1	47.61	64.5
10.4	36.33	2.7	10.3	61.01	7.7	10.2	80.98	8.4	10.1	46.61	64.3
11.4	35.26	2.9	11.3	59.83	7.8	11.2	79.77	8.4	11.1	45.57	64.2
12.4	34.23	3.1	12.3	58.66	7.9	12.2	78.52	8.4	12.1	44.50	64.0
13.4	33.23	3.3	13.3	57.50	8.0	13.2	77.22	8.3	13.1	43.45	63.7
14.3	32.27	3.5	14.3	56.30	8.1	14.2	75.87	8.3	14.1	42.42	63.5
15.3	31.30	3.7	15.3	55.05	8.2	15.2	74.50	8.2	15.1	41.45	63.2
16.3	30.33	3.9	16.3	53.73	8.3	16.2	73.13	8.1	16.1	40.55	62.9
17.3	29.31	4.2	17.3	52.36	8.4	17.2	71.79	8.0	17.1	39.72	62.6
18.3	28.22	4.4	18.3	50.94	8.5	18.2	70.50	7.8	18.1	38.97	62.4
19.3	27.06	4.6	19.3	49.50	8.6	19.2	69.27	7.7	19.1	38.25	62.1
20.3	25.84	4.9	20.3	48.07	8.6	20.2	68.11	7.6	20.1	37.56	61.9
21.3	24.57	5.1	21.2	46.66	8.7	21.2	67.01	7.4	21.1	36.87	61.6
22.3	23.29	5.2	22.2	45.30	8.7	22.2	65.94	7.3	22.1	36.17	61.4
23.3	22.02	5.4	23.2	44.01	8.7	23.2	64.89	7.2	23.1	35.44	61.1
24.3	20.78	5.6	24.2	42.75	8.7	24.2	63.82	7.1	24.1	34.68	60.9
25.3	19.57	5.7	25.2	41.55	8.7	25.2	62.70	7.0	25.1	33.89	60.7
26.3	18.41	5.8	26.2	40.35	8.7	26.1	61.54	6.9	26.1	33.07	60.4
27.3	17.30	5.9	27.2	39.15	8.7	27.1	60.35	6.8	27.1	32.26	60.1
28.3	16.21	6.1	28.2	37.92	8.8	28.1	59.11	6.6	28.1	31.49	59.8
29.3	15.13	6.3	29.2	36.64	8.8	29.1	57.87	6.5	29.1	30.79	59.5
30.3	14.02	6.5	30.2	35.31	8.9	30.1	56.62	6.3	30.1	30.16	59.2
31.3	12.85	6.6	31.2	33.92	8.9	31.1	55.42	6.1	31.1	29.60	58.8
32.3	11.62	6.8	32.2	32.49	8.9	32.1	54.27	5.9	32.1	29.12	58.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	21 Cassiopeæ.		A Cassiopeæ.		50 Cassiopeæ.		ι Cassiopeæ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 0 ^m 36	[°] 74 ['] 15	^h 1 ^m 21	[°] 69 ['] 34	^h 1 ^m 52	[°] 71 ['] 46	^h 2 ^m 18	[°] 66 ['] 47
Jan. 0.3	57.17 -71	53.4 +0.2	24.07 -51	57.9 +0.7	11.17 -50	44.4 +1.1	11.35 -37	77.0 +1.2
10.2	56.45 .71	53.3 -0.4	24.45 .53	58.2 +0.1	10.62 .56	45.2 +0.5	10.95 .42	78.0 0.7
20.2	55.74 .60	52.6 1.0	23.92 .54	58.0 -0.6	10.02 .61	45.5 0.0	10.51 .46	78.5 +0.2
30.2	55.06 .58	51.3 1.6	23.38 .52	57.2 1.1	9.40 .61	45.1 -0.6	10.04 .47	78.4 -0.3
Feb. 9.2	54.45 .57	49.4 2.1	22.87 .49	55.9 1.6	8.80 .59	44.2 1.2	9.56 .47	77.8 0.0
19.1	53.92 .46	47.1 2.5	22.40 .44	54.1 2.0	8.22 .55	42.8 1.7	9.10 .45	76.6 1.4
Mar. 1.1	53.50 .33	44.4 2.8	22.00 .36	51.8 2.4	7.71 .47	40.9 2.1	8.67 .40	75.0 1.8
11.1	53.21 .22	41.6 3.0	21.68 .37	49.3 2.6	7.28 .38	38.6 2.4	8.29 .34	73.0 2.2
21.1	53.06 -.08	38.5 3.0	21.47 .16	46.5 2.8	6.95 .27	36.0 2.7	7.99 .26	70.7 2.4
31.0	53.06 +0.08	35.5 3.0	21.36 -.06	43.7 2.8	6.74 .15	33.2 2.8	7.78 .16	68.2 2.6
April 10.0	53.22 .23	32.6 2.8	21.38 +0.08	40.0 2.8	6.66 -.01	30.4 2.8	7.67 -.06	65.6 2.6
20.0	53.53 .57	29.9 2.8	21.52 .19	36.2 2.6	6.72 +.12	27.6 2.7	7.66 +.06	63.0 2.6
29.9	53.97 .51	27.5 2.2	21.77 .21	35.7 2.3	6.91 .28	24.0 2.8	7.76 .18	60.4 2.4
May 9.9	54.54 .03	25.5 1.7	22.14 .41	33.6 2.6	7.23 .50	22.5 2.2	7.97 .29	58.1 2.2
19.9	55.22 .72	24.0 1.2	22.61 .51	31.8 1.6	7.67 .49	20.5 1.9	8.29 .30	56.0 1.9
29.9	55.99 .79	23.1 0.7	23.16 .56	30.5 1.1	8.21 .59	18.8 1.5	8.69 .44	54.3 1.5
June 8.8	56.81 .84	22.6 -0.2	23.77 .64	29.7 0.6	8.84 .67	17.5 1.0	9.18 .51	53.0 1.1
18.8	57.67 .87	22.7 +0.4	24.44 .06	29.3 -0.1	9.55 .73	16.8 -0.5	9.72 .57	52.1 0.7
28.8	58.54 .87	23.4 0.9	25.14 .71	29.5 +0.4	10.30 .77	16.5 0.0	10.32 .61	51.7 -0.8
July 8.7	59.41 .86	24.6 1.4	25.85 .71	30.2 0.9	11.08 .79	16.8 +0.8	10.95 .54	51.7 +0.3
18.7	60.24 .81	26.3 1.9	26.56 .70	31.4 1.4	11.88 .79	17.5 1.0	11.60 .55	52.2 0.7
28.7	61.02 .75	28.4 2.3	27.24 .57	33.1 1.9	12.66 .77	18.7 1.4	12.25 .54	53.2 1.2
Aug. 7.7	61.73 .67	30.9 2.7	27.89 .52	35.1 2.3	13.41 .74	20.4 1.9	12.89 .53	54.5 1.6
17.6	62.36 .58	33.8 3.0	28.49 .57	37.6 2.6	14.13 .69	22.4 2.2	13.50 .50	56.2 1.9
27.6	62.90 .48	37.0 3.3	29.03 .50	40.3 2.9	14.79 .68	24.9 2.6	14.08 .50	58.4 2.3
Sept. 6.6	63.33 .39	40.4 3.5	29.49 .43	43.4 3.1	15.38 .66	27.6 2.9	14.61 .51	60.2 2.5
16.6	63.65 .27	43.9 3.6	29.88 .35	46.6 2.3	15.99 .48	30.6 3.1	15.09 .45	63.5 2.6
26.5	63.85 .18	47.5 3.6	30.19 .26	49.9 2.4	16.33 .49	33.8 3.2	15.50 .39	66.4 2.6
Oct. 6.5	63.94 +0.08	51.1 3.6	30.41 .18	53.3 2.4	16.68 .29	37.1 3.4	15.85 .31	69.4 3.1
16.5	63.91 -.09	54.7 3.5	30.53 +0.09	56.7 2.4	16.92 .20	40.5 3.4	16.12 .24	72.5 3.1
26.5	63.77 .20	58.1 3.3	30.57 -.01	60.1 2.3	17.06 +0.09	43.8 3.2	16.32 .16	75.7 2.1
Nov. 5.4	63.51 .21	61.2 3.0	30.52 .10	63.2 2.1	17.10 -.01	47.1 2.2	16.43 +0.07	78.8 2.1
15.4	63.15 .41	64.1 2.6	30.38 .18	66.2 2.8	17.03 .12	50.3 2.6	16.46 -.01	81.8 2.9
25.4	62.68 .51	66.5 2.2	30.15 .27	68.8 2.4	16.87 .22	53.2 2.7	16.41 .09	84.6 2.7
Dec. 5.3	62.13 .59	68.5 1.7	29.84 .34	71.1 2.0	16.59 .23	55.7 2.4	16.27 .16	87.9 2.4
15.3	61.51 .56	69.9 1.2	29.46 .42	72.9 1.6	16.22 .41	57.9 1.9	16.05 .26	89.3 2.6
25.3	60.83 .70	70.8 +0.6	29.01 .47	74.1 1.6	15.77 .49	59.6 1.5	15.76 .39	91.1 1.6
35.3	60.12 -.72	71.0 0.0	28.51 -.51	74.9 +0.4	15.24 -.55	60.8 +0.8	15.39 -.39	92.5 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	48 Cephei.		α Camelopardalis.		Groombridge 966.		22 Camelopardalis (H).									
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.								
	^h 3	^m 3	^h 4	^m 40	^h 5	^m 21	^h 6	^m 4								
	^s 77	^s 14	^s 66	^s 6	^s 74	^s 56	^s 69	^s 21								
Jan. 0.4	38.87	-80	35.8	+2.0	54.11	-09	42.4	+2.4	63.03	-80	51.8	+2.9	14.73	+10	32.2	+8.7
10.4	38.20	-73	37.6	1.6	53.96	-19	44.6	2.2	62.90	-81	54.5	2.6	14.76	-02	34.8	2.6
20.4	37.42	-63	39.0	1.0	53.73	-28	46.5	1.7	62.62	-86	57.0	2.4	14.68	-14	37.3	2.4
30.3	36.56	-58	39.6	+0.4	53.40	-36	48.1	1.2	62.18	-80	59.3	2.0	14.48	-26	39.6	2.2
Feb. 9.3	35.65	-51	39.8	-0.2	53.01	-43	49.2	0.9	61.61	-82	61.0	1.6	14.16	-37	41.7	1.9
19.3	34.73	-40	39.3	0.8	52.56	-46	49.9	+0.4	60.94	-70	62.4	1.1	13.74	-48	43.3	1.5
Mar. 1.3	33.85	-35	38.3	1.2	52.08	-48	50.1	-0.1	60.20	-75	63.2	+0.6	13.25	-52	44.6	1.0
11.2	33.04	-26	36.7	1.6	51.60	-48	49.7	0.5	59.43	-78	63.5	0.0	12.71	-58	45.3	+0.5
21.2	32.33	-14	34.7	2.2	51.13	-48	49.0	1.0	58.65	-76	63.2	-0.0	12.15	-58	45.6	0.0
31.2	31.76	-49	32.3	2.5	50.70	-40	47.7	1.4	57.90	-71	62.3	1.1	11.59	-55	45.4	-0.5
April 10.1	31.35	-32	29.7	2.7	50.33	-34	46.1	1.7	57.22	-63	61.1	1.6	11.06	-50	44.7	0.9
20.1	31.12	-14	26.9	2.8	50.03	-26	44.2	2.0	56.64	-58	60.4	1.0	10.50	-44	43.5	1.2
30.1	31.07	+45	24.0	2.8	49.83	-16	42.1	2.2	56.17	-40	57.3	2.2	10.18	-36	42.0	1.7
May 10.1	31.22	-28	21.3	2.7	49.72	-06	39.8	2.8	55.85	-28	55.0	2.4	9.87	-26	40.1	2.0
20.0	31.55	-49	18.6	2.4	49.72	+05	37.5	2.2	55.67	-10	52.4	2.6	9.66	-16	37.9	2.2
30.0	32.06	-56	16.2	2.2	49.82	-15	35.2	2.2	55.66	+05	49.8	2.6	9.56	-05	35.6	2.4
June 9.0	32.71	-72	14.1	1.0	50.03	-25	33.0	2.1	55.78	-21	47.1	2.6	9.57	+06	33.2	2.4
19.0	33.51	-86	12.4	1.5	50.33	-24	30.9	1.9	56.06	-28	44.6	2.2	9.60	-18	30.7	2.4
29.0	34.42	-96	11.1	1.1	50.71	-22	29.1	1.7	56.49	-40	42.1	2.2	9.92	-28	28.3	2.4
July 8.9	35.43	1.03	10.2	0.6	51.17	-29	27.5	1.4	57.04	-41	39.9	2.1	10.26	-38	26.0	2.4
18.9	36.49	1.46	9.8	-0.1	51.69	-36	26.3	1.1	57.71	-72	37.9	1.6	10.68	-47	23.9	2.0
28.8	37.60	1.11	9.9	+0.2	52.27	-39	25.4	0.7	58.48	-81	36.2	1.5	11.19	-54	21.9	1.5
Aug. 7.8	38.72	1.12	10.5	0.5	52.88	-43	24.8	-0.4	59.34	-90	34.8	1.2	11.77	-61	20.2	1.5
17.8	39.83	1.10	11.5	1.2	53.52	-46	24.6	0.0	60.25	-94	33.9	0.8	12.40	-68	18.8	1.2
27.8	40.91	1.06	13.0	1.7	54.17	-50	24.7	+0.2	61.22	-96	33.3	-0.4	13.09	-71	17.7	1.0
Sept. 6.7	41.95	1.00	14.8	2.0	54.83	-53	25.2	0.7	62.22	-100	33.0	0.0	13.81	-74	16.9	0.6
16.7	42.91	-02	17.1	2.4	55.48	-54	26.0	1.0	63.23	-101	33.2	+0.4	14.56	-75	16.4	-0.2
26.7	43.72	-02	19.6	2.7	56.12	-52	27.2	1.2	64.24	-100	33.8	0.8	15.32	-76	16.4	+0.1
Oct. 6.7	44.56	-11	22.5	2.0	56.72	-50	28.7	1.6	65.22	-96	34.8	1.2	16.08	-75	16.7	0.5
16.6	45.21	-20	25.5	2.1	57.29	-44	30.5	1.9	66.17	-91	36.2	1.5	16.83	-74	17.3	0.6
26.6	45.73	-44	28.9	2.2	57.81	-49	32.5	2.1	67.05	-86	37.9	1.9	17.56	-70	18.3	1.2
Nov. 5.6	46.11	-50	32.1	2.2	58.27	-43	34.7	2.2	67.86	-76	40.0	2.2	18.24	-68	19.7	1.4
15.6	46.33	+14	35.4	2.2	58.66	-38	37.2	2.6	63.57	-68	42.3	2.6	18.87	-69	21.4	1.9
25.5	46.39	-03	38.7	2.2	58.97	-27	39.7	2.6	69.16	-62	44.9	2.7	19.42	-51	23.4	2.1
Dec. 5.5	46.28	-19	41.8	2.0	59.19	-17	42.4	2.6	69.61	-58	47.7	2.9	19.88	-42	25.7	2.4
15.5	46.00	-36	44.7	2.7	59.32	+07	45.0	2.6	69.91	-22	50.6	2.9	20.25	-31	28.2	2.5
25.4	45.56	-51	47.2	2.2	59.34	-02	47.6	2.6	70.07	+07	53.6	2.9	20.49	-19	30.8	2.6
35.4	44.98	-58	49.4	+1.9	59.26	-11	50.0	+2.2	70.04	-10	56.5	+2.6	20.69	+08	33.4	+2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	51 Cephei (H.)		Piazzi vii. 67.		3 Ursæ Majoris (H.)		α Ursæ Majoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 6 ^m 36	[°] 87 ['] 14	^h 7 ^m 16	[°] 68 ['] 43	^h 7 ^m 59	[°] 68 ['] 51	^h 8 ^m 58	[°] 67 ['] 39
Jan. 0.5	97.21 +.87	22.9 +2.2	64.01 +.29	42.5 +2.4	35.06 +.40	24.3 +2.2	40.80 +.49	56.8 +1.6
10.5	97.62 -.07	26.2 2.2	64.25 .17	45.0 2.5	35.41 .28	26.6 2.4	41.25 .40	58.6 2.0
20.5	97.08 .97	29.4 2.1	64.36 +.06	47.6 2.6	35.63 .16	29.1 2.6	41.61 .30	60.8 2.3
30.5	95.68 1.82	32.4 2.9	64.34 -.06	50.2 2.5	35.72 +.03	31.8 2.6	41.84 .18	63.2 2.5
Feb. 9.4	93.44 2.89	35.2 2.6	64.19 .20	52.7 2.4	35.68 -.10	34.4 2.0	41.96 +.06	65.9 2.6
19.4	90.49 2.27	37.5 2.1	63.93 .21	55.0 2.2	35.52 .22	37.0 2.4	41.95 -.06	68.5 2.7
Mar. 1.4	86.91 2.80	39.4 1.6	63.57 .40	57.0 1.8	35.24 .22	39.3 2.2	41.82 .18	71.2 2.6
11.3	82.90 4.16	40.8 1.1	63.13 .47	58.6 1.4	34.87 .41	41.3 1.9	41.59 .28	73.6 2.3
21.3	78.62 4.24	41.6 +0.6	62.63 .21	59.7 1.0	34.42 .47	43.0 1.4	41.26 .36	75.8 2.0
31.3	74.22 4.34	41.8 -0.1	62.10 .23	60.4 +0.5	33.92 .21	44.2 1.0	40.86 .42	77.7 1.7
April 10.3	69.94 4.17	41.3 0.7	61.57 .23	60.6 0.0	33.40 .23	44.9 +0.5	40.42 .46	79.1 1.2
20.2	65.88 2.87	40.3 1.3	61.05 .20	60.4 -0.5	32.87 .22	45.2 0.0	39.94 .46	80.2 0.8
30.2	62.21 2.43	38.8 1.8	60.57 .46	59.6 0.9	32.37 .49	45.0 -0.5	39.46 .48	81.7 +0.3
May 10.2	59.03 2.88	36.8 2.2	60.16 .26	58.4 1.4	31.90 .44	44.3 0.9	38.99 .46	80.7 -0.2
20.2	56.51 2.16	34.4 2.6	59.81 .20	56.9 1.7	31.49 .27	43.1 1.3	38.55 .42	80.2 0.7
30.1	54.71 1.44	31.7 2.8	59.56 .21	55.0 2.0	31.16 .29	41.6 1.7	38.16 .36	79.3 1.1
June 9.1	53.64 -.09	28.8 2.0	59.40 .11	52.8 2.2	30.91 .21	39.7 2.0	37.83 .30	78.0 1.6
19.1	53.33 +.10	25.8 2.1	59.34 -.01	50.5 2.4	30.75 .11	37.5 2.3	37.56 .23	76.2 1.9
29.0	53.83 .27	22.7 2.1	59.39 +.00	48.0 2.5	30.69 -.01	35.1 2.5	37.38 .15	74.2 2.2
July 9.0	55.07 1.62	19.6 2.0	59.53 .19	45.5 2.5	30.72 +.06	32.6 2.6	37.27 -.07	71.8 2.4
19.0	57.07 2.24	16.7 2.6	59.77 .29	43.0 2.5	30.85 .17	30.0 2.7	37.25 +.02	69.3 2.6
29.0	59.75 2.01	13.9 2.6	60.10 .27	40.5 2.4	31.07 .26	27.3 2.7	37.31 .10	66.6 2.6
Aug. 7.9	63.08 2.58	11.4 2.4	60.51 .46	38.2 2.3	31.38 .25	24.6 2.6	37.46 .18	63.7 2.8
17.9	66.92 4.09	9.2 2.1	61.00 .29	35.9 2.1	31.77 .42	22.1 2.5	37.68 .26	60.9 2.9
27.9	71.26 4.64	7.3 1.7	61.55 .26	33.9 1.9	32.24 .20	19.6 2.4	37.98 .24	58.0 2.6
Sept. 6.9	75.99 4.88	5.8 1.3	62.16 .24	32.1 1.6	32.77 .26	17.3 2.2	38.36 .41	55.2 2.7
16.8	81.02 5.12	4.7 0.9	62.83 .28	30.6 1.3	33.36 .22	15.3 1.9	38.81 .48	52.5 2.6
26.8	86.23 5.27	4.0 -0.4	63.53 .72	29.4 1.0	34.02 .28	13.5 1.6	39.33 .24	50.0 2.4
Oct. 6.8	91.56 5.21	3.8 +0.1	64.26 .74	28.6 0.7	34.60 .71	12.0 1.3	39.90 .20	47.8 2.1
16.7	96.84 5.24	4.2 0.6	65.00 .75	28.1 -0.3	35.44 .74	10.9 0.9	40.53 .25	45.8 1.8
26.7	102.03 5.09	4.9 1.0	65.75 .75	28.0 +0.1	36.19 .75	10.2 0.5	41.20 .29	44.2 1.4
Nov. 5.7	106.93 4.72	6.2 1.5	66.49 .72	28.3 0.5	36.95 .75	9.8 -0.1	41.90 .71	43.0 1.4
15.7	111.48 4.29	8.0 2.0	67.21 .69	29.1 0.9	37.70 .74	9.9 +0.3	42.62 .72	42.2 -0.6
25.6	115.51 3.72	10.1 2.4	67.87 .64	30.2 1.2	38.42 .70	10.5 0.8	43.34 .71	41.8 0.6
Dec. 5.6	118.92 3.06	12.7 2.7	68.48 .66	31.7 1.7	39.09 .64	11.5 1.2	44.04 .66	42.1 +0.3
15.6	121.62 2.28	15.6 2.0	69.00 .48	33.6 2.0	39.70 .27	12.9 1.6	44.70 .62	42.6 0.8
25.6	123.49 1.43	18.6 2.2	69.43 .27	35.8 2.3	40.23 .48	14.7 2.0	45.30 .27	43.8 1.3
35.5	124.48 +.24	21.9 +2.2	69.75 +.26	38.2 +2.5	40.65 +.28	16.9 +2.2	45.83 +.48	45.4 +1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Draconis (H.)		24 Ursæ Majoris. (d.)		32 Ursæ Majoris.		9 Draconis (H.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 ^m 17	[°] 81 ['] 53	^h 9 ^m 22	[°] 70 ['] 24	^h 10 ^m 8	[°] 65 ['] 45	^h 10 ^m 23	[°] 76 ['] 23
Jan. 0.6	56.67 +1.31	76.6 +2.0	41.68 +.61	24.2 +1.4	21.19 +.88	52.3 +0.8	43.23 +.97	26.1 +0.9
10.6	57.85 1.06	78.8 2.4	42.24 .80	25.9 1.9	21.73 .80	53.4 1.3	44.15 .85	27.4 1.6
20.6	58.78 .78	81.4 2.7	42.69 .89	28.0 2.3	22.20 .42	54.9 1.8	44.93 .72	29.2 2.0
30.5	59.42 .48	84.2 2.9	43.01 .96	30.5 2.6	22.57 .32	56.9 2.2	45.58 .56	31.4 2.4
Feb. 9.5	59.74 +.18	87.3 3.1	43.20 +.12	33.2 2.7	22.83 .21	59.2 2.4	46.05 .26	34.0 2.7
19.5	59.74 -.18	90.4 3.1	43.25 -.02	36.0 2.8	22.99 +.10	61.8 2.6	46.34 .20	36.9 2.9
Mar. 1.5	59.44 .45	93.4 3.0	43.16 .15	38.7 2.7	23.03 -.01	64.5 2.7	46.44 +.01	39.9 3.0
11.4	58.85 .72	96.3 2.7	42.95 .96	41.4 2.6	22.97 .11	67.3 2.7	46.36 -.17	42.9 3.0
21.4	58.00 .96	98.9 2.4	42.64 .36	43.9 2.3	22.81 .21	69.8 2.6	46.10 .24	45.8 2.8
31.4	56.94 1.14	101.1 2.0	42.22 .45	46.0 1.9	22.56 .28	72.3 2.3	45.69 .48	48.5 2.6
April 10.4	55.71 1.28	102.8 1.4	41.74 .60	47.7 1.5	22.24 .34	74.4 2.0	45.14 .60	50.9 2.2
20.3	54.37 1.38	103.9 0.9	41.22 .68	49.0 1.1	21.87 .39	76.2 1.6	44.49 .69	52.9 1.8
30.3	52.98 1.39	104.6 +0.4	40.68 .66	49.9 +0.6	21.47 .41	77.6 1.2	43.76 .78	54.4 1.3
May 10.3	51.59 1.37	104.6 -0.2	40.13 .54	50.1 0.0	21.04 .42	78.5 0.7	42.98 .78	55.4 0.7
20.2	50.24 1.30	104.1 0.6	39.61 .80	49.9 -0.6	20.62 .41	78.9 +0.2	42.19 .78	55.9 +0.2
30.2	48.99 1.18	103.1 1.3	39.12 .45	49.2 1.0	20.22 .39	78.8 -0.2	41.42 .76	55.8 -0.4
June 9.2	47.88 1.04	101.5 1.8	38.70 .39	48.0 1.4	19.84 .36	78.3 0.8	40.67 .70	55.1 0.9
19.2	46.92 .86	99.5 2.2	38.34 .32	46.4 1.8	19.50 .31	77.2 1.2	39.99 .64	54.0 1.4
29.1	46.16 .66	97.1 2.6	38.06 .24	44.4 2.1	19.22 .26	75.8 1.7	39.39 .56	52.3 1.9
July 9.1	45.60 .44	94.4 2.9	37.57 .15	42.1 2.4	18.99 .20	73.9 2.0	38.87 .46	50.3 2.3
19.1	45.28 -.21	91.4 3.1	37.77 -.06	39.5 2.7	18.82 .13	71.7 2.3	38.47 .26	47.8 2.6
29.1	45.18 +.04	88.2 3.2	37.76 +.04	36.7 2.9	18.72 -.07	69.3 2.6	38.17 .22	45.0 2.9
Aug. 8.0	45.31 .25	84.9 3.3	37.84 .12	33.7 3.0	18.69 .00	66.5 2.8	38.01 -.11	42.0 3.1
18.0	45.63 .48	81.6 3.3	38.02 .22	30.7 3.1	18.73 +.07	63.6 3.0	37.96 +.02	38.7 3.3
28.0	46.27 .70	78.3 3.3	38.28 .31	27.6 3.1	18.84 .14	60.5 3.1	38.05 .15	35.4 3.4
Sept. 6.9	47.08 .91	75.0 3.3	38.63 .39	24.6 2.9	19.02 .22	57.4 3.1	38.27 .29	31.9 3.5
16.9	48.10 1.11	71.9 3.0	39.07 .48	21.7 2.8	19.28 .29	54.3 3.1	38.62 .42	28.4 3.4
26.9	49.31 1.29	69.0 2.7	39.59 .66	18.9 2.7	19.61 .37	51.2 3.0	39.10 .54	25.1 3.3
Oct. 6.9	50.68 1.45	66.5 2.4	40.19 .68	16.3 2.4	20.01 .43	48.2 2.9	39.71 .66	21.9 3.1
16.8	52.21 1.69	64.2 2.0	40.85 .69	14.0 2.1	20.48 .50	45.5 2.6	40.43 .78	18.8 2.9
26.8	53.86 1.70	62.4 1.6	41.57 .74	12.1 1.8	21.01 .56	42.9 2.4	41.27 .86	16.1 2.6
Nov. 5.8	55.60 1.77	61.0 1.1	42.33 .78	10.5 1.3	21.59 .61	40.7 2.0	42.20 .97	13.8 2.1
15.8	57.39 1.80	60.2 -0.6	43.13 .80	9.4 0.9	22.22 .64	38.9 1.6	43.20 1.08	11.9 1.7
25.7	59.19 1.78	59.9 0.0	43.93 .80	8.8 -0.4	22.88 .66	37.5 1.1	44.26 1.07	10.5 1.1
Dec. 5.7	60.95 1.72	60.2 +0.6	44.72 .78	8.7 +0.1	23.55 .66	36.6 0.6	45.35 1.09	9.6 -0.6
15.7	62.63 1.80	61.0 1.1	45.49 .74	9.1 0.7	24.21 .68	36.3 -0.1	46.44 1.07	9.3 0.0
25.6	64.16 1.44	62.4 1.6	46.19 .68	10.1 1.2	24.84 .61	36.5 +0.4	47.49 1.02	9.6 +0.6
35.6	65.50 +1.26	64.3 +2.1	46.82 +.00	11.5 +1.7	25.43 +.66	37.2 +1.0	48.48 +.94	10.6 +1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		4 Draconis (H.)		α Draconis.		32 Camelop. (fol.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h ₁₁ ^m ₂₃	[°] ₇₀ ['] ₃	^h ₁₂ ^m ₅	[°] ₇₈ ['] ₂₀	^h ₁₂ ^m ₂₇	[°] ₇₀ ['] ₃₀	^h ₁₂ ^m ₄₇	[°] ₈₄ ['] ₇
Jan. 0.7	27.91 +.74	31.8 -0.1	53.88 +1.21	58.5 -0.8	45.83 +.76	58.5 -0.9	64.20 +2.18	49.8 -0.8
10.7	28.64 .80	32.1 +0.6	55.07 1.17	58.4 +0.2	46.59 .76	57.9 -0.2	66.44 2.26	49.3 -0.2
20.7	29.30 .83	33.0 1.2	56.21 1.09	59.0 0.9	47.33 .71	58.0 +0.4	68.69 2.19	49.5 +0.3
30.6	29.89 .84	34.5 1.7	57.25 .98	60.2 1.6	48.02 .68	58.7 1.0	70.82 2.04	50.3 1.1
Feb. 9.6	30.38 .82	36.4 2.2	58.17 .88	62.0 2.0	48.64 .67	60.1 1.6	72.77 1.62	51.7 1.7
19.6	30.75 .81	38.8 2.6	58.92 .86	64.3 2.6	49.16 .47	61.9 2.1	74.47 1.55	53.7 2.2
Mar. 1.6	30.99 .19	41.5 2.8	59.49 .47	66.9 2.8	49.58 .36	64.3 2.4	75.86 1.21	56.2 2.4
11.5	31.12 +.06	44.4 2.9	59.85 .27	69.9 2.0	49.88 .24	67.0 2.6	76.89 .84	59.0 2.9
21.5	31.11 -.07	47.4 2.9	60.01 +.06	73.0 2.1	50.05 +.11	69.9 2.0	77.54 .45	62.0 2.1
31.5	30.99 .17	50.3 2.8	59.97 -.14	76.2 2.1	50.10 -.01	72.9 2.1	77.79 +.03	65.2 2.2
April 10.4	30.76 .27	53.1 2.6	59.73 .23	79.2 2.0	50.04 .12	76.0 2.0	77.63 -.24	68.4 2.1
20.4	30.44 .26	55.6 2.3	59.31 .50	82.1 2.7	49.86 .23	78.9 2.6	77.10 .71	71.4 2.9
30.4	30.05 .42	57.8 2.0	58.74 .64	84.6 2.4	49.59 .22	81.6 2.6	76.22 1.04	74.3 2.7
May 10.4	29.60 .47	59.5 1.8	58.03 .70	86.8 1.9	49.24 .20	84.0 2.2	75.62 1.22	76.8 2.3
20.3	29.11 .50	60.8 1.0	57.23 .84	88.5 1.4	48.82 .45	86.0 1.6	73.56 1.56	78.8 1.6
30.3	28.61 .61	61.6 +0.6	56.36 .80	89.7 0.9	48.34 .49	87.6 1.3	71.91 1.75	80.4 1.4
June 9.3	28.09 .80	61.8 0.0	55.44 .82	90.3 +0.4	47.84 .62	88.6 0.8	70.07 1.88	81.5 0.8
19.3	27.60 .49	61.5 -0.8	54.50 .82	90.4 -0.2	47.31 .63	89.2 +0.3	68.14 1.96	82.1 +0.3
29.2	27.12 .45	60.7 1.0	53.58 .80	90.0 0.7	46.78 .63	89.2 -0.3	66.17 1.97	82.1 -0.3
July 9.2	26.69 .41	59.5 1.6	52.70 .86	89.0 1.3	46.26 .61	88.6 0.8	64.21 1.94	81.5 0.8
19.2	26.31 .28	57.8 2.0	51.86 .79	87.4 1.8	45.76 .48	87.6 1.3	62.30 1.86	80.4 1.4
29.1	25.98 .29	55.6 2.4	51.11 .71	85.5 2.2	45.30 .44	86.1 1.6	60.48 1.74	78.7 1.9
Aug. 8.1	25.72 .22	53.0 2.7	50.45 .61	83.0 2.6	44.88 .30	84.0 2.2	58.81 1.68	76.6 2.3
18.1	25.54 .16	50.2 2.0	49.90 .49	80.2 2.0	44.51 .23	81.6 2.6	57.32 1.29	74.1 2.7
28.1	25.43 -.06	47.0 2.3	49.47 .26	77.1 2.2	44.21 .26	78.8 2.9	56.03 1.16	71.2 2.6
Sept. 7.0	25.41 +.02	43.7 2.4	49.18 .22	73.7 2.5	43.99 .18	75.7 2.2	54.99 .91	67.9 2.3
17.0	25.48 .11	40.2 2.6	49.04 -.07	70.1 2.7	43.85 -.09	72.3 2.6	54.22 .92	64.4 2.6
27.0	25.64 .21	36.7 2.8	49.05 +.09	66.4 2.7	43.81 .00	68.8 2.0	53.74 -.22	60.7 2.7
Oct. 7.0	25.90 .20	33.2 2.6	49.22 .20	62.6 2.7	43.86 +.10	65.1 2.7	53.58 .00	56.9 2.6
16.9	26.25 .40	29.7 2.4	49.56 .42	58.9 2.7	44.01 .20	61.4 2.7	53.74 +.23	53.1 2.6
26.9	26.70 .49	26.4 2.2	49.06 .59	55.3 2.6	44.28 .21	57.7 2.6	54.24 .67	49.3 2.7
Nov. 5.9	27.23 .87	23.4 2.9	50.74 .74	51.9 2.2	44.64 .42	54.1 2.4	55.07 1.00	45.7 2.5
15.8	27.84 .08	20.6 2.6	51.55 .88	48.8 2.9	45.11 .61	50.8 2.2	56.23 1.31	42.3 2.2
25.8	28.52 .70	18.3 2.1	52.50 1.01	46.1 2.6	45.68 .80	47.8 2.6	57.70 1.00	39.2 2.8
Dec. 5.8	29.26 .76	16.5 1.6	53.57 1.11	43.8 2.0	46.32 .08	45.2 2.4	59.44 1.00	36.6 2.4
15.8	30.02 .77	15.2 1.6	54.72 1.16	42.1 1.4	47.03 .72	43.0 1.9	61.41 2.06	34.5 1.8
25.7	30.80 .76	14.5 -0.4	55.92 1.21	41.0 0.8	47.78 .76	41.4 1.3	63.55 2.19	32.9 1.2
35.7	31.54 +.72	14.4 +0.2	57.13 +1.20	40.6 -0.2	48.55 +.72	40.5 -0.7	65.79 +2.20	32.0 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		5 Ursæ Minoris.		β Ursæ Minoris.		γ^2 Ursæ Minoris.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 14 ^m 0	[°] 65 ['] 0	^h 14 ^m 27	[°] 76 ['] 16	^h 14 ^m 51	[°] 74 ['] 41	^h 15 ^m 20	[°] 72 ['] 18
Jan. 0.8	45.06 +.56	29.6 -2.2	45.72 +.84	69.8 -2.8	2.84 +.78	45.2 -2.8	53.46 +.87	18.9 -2.9
10.8	45.63 -.59	27.7 1.6	46.62 .08	58.8 1.7	3.61 .81	42.9 2.0	54.09 .66	16.2 2.4
20.8	46.24 .00	26.4 0.9	47.59 .98	57.4 1.1	4.46 .87	41.1 1.4	54.79 .73	14.1 1.8
30.7	46.84 .59	25.8 -0.3	48.59 1.00	56.6 -0.4	5.35 .89	40.0 0.8	55.55 .77	12.6 1.2
Feb. 9.7	47.42 .56	25.9 +0.4	49.58 .97	56.6 +0.2	6.25 .89	39.6 -0.1	56.33 .78	11.8 -0.8
19.7	47.96 .82	26.6 1.0	50.53 .91	57.2 0.9	7.13 .88	39.9 +0.6	57.11 .77	11.6 +0.2
Mar. 1.7	48.45 .46	27.9 1.6	51.41 .83	58.4 1.6	7.95 .79	40.8 1.2	57.87 .78	12.1 0.6
11.6	48.87 .38	29.7 2.1	52.18 .71	60.3 2.0	8.70 .70	42.4 1.8	58.57 .66	13.2 1.4
21.6	49.21 .30	32.1 2.5	52.83 .87	62.5 2.6	9.35 .59	44.4 2.3	59.19 .68	15.0 2.0
31.6	49.46 .21	34.8 2.9	53.33 .43	65.3 2.8	9.87 .46	47.0 2.7	59.73 .48	17.2 2.6
April 10.6	49.62 .12	37.8 3.0	53.68 .27	68.3 3.1	10.26 .22	49.8 3.0	60.15 .37	19.9 3.6
20.5	49.70 +.08	40.8 3.1	53.86 +.10	71.4 3.2	10.52 .18	53.0 3.2	60.47 .26	22.9 3.0
30.5	49.68 -.06	44.0 3.1	53.89 -.06	74.6 3.2	10.62 +.08	56.2 3.2	60.66 .13	26.0 3.2
May 10.5	49.59 .13	47.0 2.9	53.75 .21	77.8 3.1	10.59 -.10	59.4 3.1	60.72 +.01	29.3 3.2
20.4	49.43 .20	49.8 2.7	53.47 .86	80.7 2.8	10.41 .24	62.4 3.0	60.67 -.11	32.5 3.1
30.4	49.18 .26	52.3 2.8	53.05 .48	83.4 2.8	10.11 .26	65.3 2.7	60.50 .22	35.5 2.9
June 9.4	48.89 .32	54.4 1.9	52.51 .59	85.8 2.2	9.70 .47	67.9 2.4	60.23 .23	38.3 2.7
19.4	48.55 .36	56.2 1.8	51.87 .68	87.7 1.7	9.18 .56	70.1 2.0	59.85 .42	40.9 2.4
29.3	48.17 .39	57.4 1.0	51.14 .76	89.2 1.2	8.57 .64	71.9 1.6	59.38 .50	43.0 1.8
July 9.3	47.76 .42	58.2 +0.5	50.35 .82	90.1 0.7	7.89 .71	73.1 1.0	58.84 .57	44.7 1.5
19.3	47.33 .43	58.5 0.0	49.51 .88	90.6 +0.2	7.16 .76	73.9 +0.6	58.24 .63	46.0 1.0
29.3	46.89 .43	53.2 -0.5	48.65 .87	90.5 -0.4	6.38 .78	74.2 0.0	57.59 .67	46.7 +0.6
Aug. 8.2	46.46 .43	57.4 1.0	47.78 .66	89.8 0.9	5.59 .79	73.9 -0.8	56.90 .69	46.9 -0.1
18.2	46.04 .41	56.1 1.5	46.93 .84	88.7 1.4	4.80 .78	73.1 1.1	56.20 .70	46.5 0.6
28.2	45.64 .38	54.4 2.0	46.11 .79	87.0 1.8	4.03 .78	71.8 1.6	55.50 .69	45.7 1.1
Sept. 7.1	45.28 .34	52.2 2.4	45.34 .73	84.9 2.3	3.29 .71	70.0 2.0	54.82 .66	44.3 1.6
17.1	44.97 .28	49.5 2.8	44.66 .64	82.3 2.7	2.61 .64	67.7 2.8	54.17 .62	42.4 2.1
27.1	44.72 .22	46.5 3.1	44.06 .84	79.4 3.1	2.01 .56	65.0 2.9	53.58 .56	40.1 2.6
Oct. 7.1	44.53 .16	43.2 3.4	43.58 .43	76.1 2.4	1.50 .46	62.0 3.2	53.06 .47	37.4 2.9
17.0	44.43 -.06	39.7 3.6	43.23 .38	72.6 2.6	1.10 .33	58.6 3.5	52.63 .38	34.3 3.2
27.0	44.41 +.03	36.0 3.7	43.02 -.13	68.8 2.8	0.83 .29	55.0 3.7	52.31 .26	30.9 3.5
Nov. 6.0	44.49 .13	32.2 3.8	42.97 +.03	65.0 2.8	0.70 -.06	51.2 3.8	52.11 .14	27.3 3.7
16.0	44.66 .21	28.4 3.7	43.09 .20	61.2 3.8	0.72 +.10	47.4 3.8	52.03 -.01	23.5 3.8
25.9	44.93 .31	24.7 3.6	43.37 .37	57.4 3.7	0.90 .26	43.6 3.7	52.09 +.13	19.7 3.8
Dec. 5.9	45.28 .40	21.2 3.3	43.82 .62	53.9 3.4	1.22 .46	39.9 3.6	52.29 .27	15.9 3.7
15.9	45.73 .47	18.1 3.0	44.42 .67	50.6 3.1	1.69 .54	36.4 3.3	52.62 .39	12.3 3.5
25.8	46.23 .53	15.3 2.5	45.16 .79	47.7 2.7	2.30 .66	33.3 2.9	53.08 .51	8.9 3.2
35.8	46.79 +.58	13.1 -2.0	46.01 +.89	45.3 -2.2	3.02 +.76	30.7 -2.4	53.65 +.60	6.0 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursa Minoris		Groombridge 2390.		15 Draconis (A.)		ω Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 15 48	^m 78 11	^h 16 5	^m 68 9	^h 16 28	^m 69 3	^h 17 37	^m 68 48
Jan. 0.9	45.66 +.70	62.3 -3.1	54.43 +.39	34.8 -3.3	11.52 +.36	19.1 -3.4	40.18 +.17	71.3 -3.6
10.9	46.44 .85	59.5 2.6	54.87 .48	31.7 2.9	11.93 .45	15.9 3.1	40.41 .28	67.8 3.4
20.9	47.36 .97	57.2 2.1	55.39 .55	29.1 2.4	12.42 .53	13.1 2.6	40.75 .38	64.5 3.1
30.8	48.38 1.00	55.4 1.6	55.97 .60	27.0 1.8	12.99 .60	10.8 2.0	41.18 .47	61.6 2.7
Feb. 9.8	49.48 1.11	54.3 0.8	56.60 .63	25.5 1.2	13.62 .64	9.0 1.4	41.70 .54	59.1 2.2
19.8	50.60 1.12	53.8 -0.1	57.24 .64	24.7 -0.6	14.27 .66	7.9 0.7	42.28 .60	57.2 1.6
Mar. 1.7	51.72 1.09	54.0 +0.5	57.88 .63	24.6 +0.2	14.94 .66	7.5 -0.1	42.90 .63	55.9 1.0
11.7	52.78 1.02	54.0 1.2	58.50 .60	25.1 0.9	15.59 .64	7.8 +0.6	43.54 .65	55.2 -0.2
21.7	53.75 .92	56.4 1.8	59.08 .55	26.3 1.6	16.21 .60	8.7 1.2	44.19 .64	55.3 +0.4
31.7	54.61 .78	58.4 2.3	59.60 .48	28.1 2.0	16.78 .64	10.2 1.8	44.81 .61	56.0 1.0
April 10.6	55.32 .63	60.8 2.7	60.05 .41	30.3 2.6	17.28 .47	12.3 2.3	45.41 .57	57.3 1.6
20.6	55.87 .46	63.7 3.0	60.41 .32	33.0 2.8	17.71 .38	14.8 2.7	45.95 .51	59.2 2.1
30.6	56.24 .28	66.8 3.1	60.69 .23	36.0 3.1	18.04 .30	17.7 3.0	46.42 .43	61.6 2.6
May 10.5	56.42 +.09	70.0 3.2	60.87 .13	39.2 3.2	18.28 .19	20.8 3.2	46.81 .35	64.4 2.9
20.5	56.42 -.09	73.2 3.2	60.95 +.03	42.5 3.3	18.42 +.09	24.1 3.3	47.12 .26	67.4 3.2
30.5	56.24 .27	76.3 3.1	60.93 -.06	45.7 3.2	18.45 -.02	27.4 3.3	47.32 .16	70.7 3.3
June 9.5	55.88 .44	79.3 2.8	60.82 .16	48.8 3.0	18.39 .12	30.6 3.1	47.43 +.05	74.1 3.4
19.4	55.36 .69	82.0 2.5	60.62 .24	51.7 2.8	18.22 .21	33.6 2.9	47.43 -.06	77.5 3.3
29.4	54.70 .73	84.4 2.2	60.33 .33	54.3 2.4	17.96 .30	36.4 2.6	47.33 .15	80.7 3.2
July 9.4	53.91 .85	86.3 1.7	59.97 .40	56.6 2.0	17.62 .29	38.9 2.3	47.13 .25	83.8 3.0
19.4	53.00 .94	87.8 1.3	59.54 .46	58.4 1.6	17.19 .46	41.0 1.9	46.84 .34	86.6 2.7
29.3	52.02 1.02	88.9 0.8	59.05 .51	59.8 1.1	16.70 .52	42.7 1.4	46.46 .42	89.1 2.3
Aug. 8.3	50.97 1.07	89.4 +0.3	58.51 .55	60.7 0.6	16.16 .57	43.9 0.9	46.00 .49	91.2 1.9
18.3	49.87 1.10	89.4 -0.2	57.95 .58	61.1 +0.1	15.57 .60	44.6 +0.4	45.47 .55	92.9 1.6
28.3	48.77 1.10	88.9 0.8	57.36 .59	61.0 -0.4	14.95 .62	44.8 -0.1	44.89 .60	94.1 1.0
Sept. 7.2	47.67 1.07	87.8 1.3	56.77 .58	60.3 0.9	14.33 .63	44.4 0.6	44.27 .63	94.8 +0.5
17.2	46.62 1.02	86.3 1.8	56.20 .56	59.1 1.4	13.70 .61	43.5 1.1	43.63 .64	95.0 -0.1
27.2	45.63 .96	84.3 2.2	55.65 .52	57.4 1.9	13.10 .58	42.2 1.6	42.99 .64	94.7 0.6
Oct. 7.1	44.73 .84	81.8 2.6	55.15 .47	55.3 2.3	12.54 .53	40.3 2.1	42.36 .62	93.8 1.1
17.1	43.94 .71	79.0 3.0	54.71 .40	52.7 2.8	12.04 .47	38.0 2.6	41.76 .58	92.4 1.6
27.1	43.30 .66	75.8 3.3	54.35 .32	49.7 3.1	11.61 .39	35.2 2.9	41.21 .52	90.5 2.1
Nov. 6.1	42.82 .59	72.4 3.6	54.07 .23	46.4 3.4	11.27 .39	32.1 3.3	40.73 .44	88.2 2.6
16.0	42.53 -.20	68.7 3.7	53.91 -.11	42.8 3.6	11.03 .18	28.7 3.5	40.33 .35	85.4 3.0
26.0	42.43 .00	65.0 3.7	53.85 .00	39.1 3.8	10.90 -.07	25.0 3.7	40.03 .25	82.2 3.3
Dec. 6.0	42.53 +.21	61.3 3.7	53.91 +.12	35.3 3.8	10.89 +.05	21.3 3.8	39.83 .14	78.8 2.5
16.0	42.84 .41	57.6 3.6	54.06 .23	31.6 3.7	11.01 .17	17.5 3.7	39.75 -.02	75.2 3.6
25.9	43.34 .58	54.1 3.3	54.37 .34	28.0 3.6	11.24 .29	13.8 3.6	39.79 +.10	71.5 3.7
35.9	44.00 +.74	50.9 2.9	54.75 +.42	24.6 3.2	11.58 +.39	10.4 -3.2	39.95 +.21	67.9 -2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ψ^1 Draconis. (pr.)		50 Draconis.		δ Draconis.		τ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 17 44	^m 72° 12'	^h 18 50	^m 75° 16'	^h 19 12	^m 67° 25'	^h 19 18	^m 73° 6'
Jan. 1.0	14.09 +16	52.6 -2.6	34.02 -09	41.0 -2.5	27.99 -06	50.3 -2.5	1.68 -14	39.0 -2.4
11.0	14.32 -20	49.1 -2.4	34.03 +08	37.5 -2.5	27.98 +04	46.8 -2.5	1.61 -00	35.5 -2.5
20.9	14.63 -42	45.7 -2.2	34.20 -26	34.0 -2.4	28.07 -15	43.2 -2.5	1.68 +14	32.0 -2.5
30.3	15.16 -58	42.7 -2.8	34.53 -41	30.6 -2.2	28.27 -28	39.8 -2.2	1.89 -28	28.6 -2.2
Feb. 9.9	15.74 -52	40.2 -2.3	35.01 -55	27.6 -2.9	28.57 -34	35.6 -2.0	2.24 -42	25.4 -2.0
19.9	16.39 -59	38.2 -1.7	35.62 -56	25.0 -2.4	28.96 -42	33.8 -2.6	2.71 -52	22.5 -2.6
Mar. 1.8	17.11 -73	36.8 -1.1	36.34 -76	22.8 -1.9	29.42 -49	31.5 -2.1	3.29 -52	20.1 -2.1
11.8	17.86 -76	36.1 -0.4	37.14 -68	21.3 -1.2	29.94 -53	29.7 -1.6	3.95 -70	18.3 -1.6
21.8	18.61 -74	36.0 +0.3	38.00 -57	20.4 -0.6	30.52 -59	28.6 -0.8	4.68 -78	17.0 -0.9
31.8	19.35 -72	36.6 -0.9	38.89 -59	20.1 +0.1	31.11 -60	28.1 -0.2	5.45 -77	16.4 -0.3
April 10.7	20.05 -57	37.9 -1.5	39.77 -57	20.5 -0.7	31.72 -60	28.2 +0.5	6.23 -78	16.4 +0.4
20.7	20.63 -50	39.7 -2.1	40.62 -52	21.5 -1.3	32.32 -59	29.1 -1.1	7.00 -75	17.1 -1.0
30.7	21.24 -51	42.0 -2.5	41.41 -75	23.1 -1.9	32.89 -55	30.5 -1.7	7.73 -71	18.4 -1.6
May 10.6	21.71 -41	44.7 -2.8	42.13 -56	25.2 -2.2	33.42 -50	32.4 -2.2	8.42 -64	20.3 -2.1
20.6	22.07 -20	47.7 -2.1	42.73 -55	27.8 -2.6	33.89 -44	34.9 -2.6	9.02 -56	22.6 -2.5
30.6	22.31 -18	51.0 -2.2	43.22 -42	30.7 -2.1	34.29 -26	37.7 -2.0	9.53 -46	25.4 -2.9
June 9.6	22.44 +06	54.3 -2.3	43.58 -29	33.9 -2.2	34.62 -28	40.8 -2.2	9.94 -34	28.5 -2.2
19.5	22.44 -06	57.6 -2.2	43.80 +14	37.2 -2.4	34.85 -18	44.2 -2.4	10.22 -22	31.8 -2.4
29.5	22.32 -18	60.9 -2.2	43.87 -51	40.7 -2.4	34.98 +09	47.6 -2.6	10.38 +10	35.2 -2.5
July 9.5	22.08 -20	64.0 -2.0	43.78 -15	44.1 -2.2	35.02 -01	51.1 -2.5	10.41 -03	38.7 -2.5
19.5	21.72 -40	66.8 -2.7	43.56 -20	47.4 -2.2	34.96 -11	54.5 -2.2	10.31 -16	42.1 -2.4
29.4	21.27 -20	69.4 -2.2	43.19 -42	50.5 -2.0	34.80 -20	57.8 -2.1	10.08 -29	45.4 -2.2
Aug. 8.4	20.72 -59	71.5 -2.0	42.69 -56	53.3 -2.7	34.55 -20	60.9 -2.9	9.73 -41	48.5 -2.0
18.4	20.10 -56	73.3 -1.5	42.08 -56	55.9 -2.4	34.21 -28	63.7 -2.6	9.27 -51	51.4 -2.7
28.3	19.40 -71	74.5 -1.0	41.36 -76	58.1 -2.0	33.79 -45	66.1 -2.2	8.71 -60	53.9 -2.2
Sept. 7.3	18.67 -75	75.3 +0.5	40.57 -84	59.8 -1.5	33.31 -51	68.1 -1.8	8.07 -68	56.0 -1.9
17.3	17.90 -77	75.6 -0.9	39.67 -90	61.2 -1.0	32.77 -55	69.7 -1.2	7.35 -74	57.7 -1.5
27.3	17.13 -77	75.4 -0.5	38.75 -92	61.9 -0.8	32.20 -59	70.8 -0.8	6.58 -78	58.9 -1.0
Oct. 7.2	16.36 -75	74.6 -1.0	37.81 -94	62.2 +0.1	31.60 -60	71.4 +0.2	5.77 -81	59.7 +0.5
17.2	15.63 -70	73.3 -1.5	36.87 -92	62.0 -0.5	31.00 -60	71.4 -0.2	4.96 -81	59.8 -0.1
27.2	14.94 -64	71.5 -2.0	35.96 -89	61.2 -1.0	30.41 -57	71.0 -0.7	4.16 -79	59.5 -0.7
Nov. 6.2	14.36 -55	69.2 -2.5	35.10 -82	59.9 -1.6	29.85 -52	69.9 -1.2	3.30 -74	58.5 -1.2
16.1	13.86 -45	66.5 -2.9	34.31 -73	58.1 -2.1	29.34 -48	68.3 -1.6	2.68 -58	57.1 -1.7
26.1	13.46 -24	63.4 -2.2	33.61 -62	55.7 -2.5	28.89 -41	66.2 -2.2	2.04 -50	55.1 -2.2
Dec. 6.1	13.19 -20	60.0 -2.5	33.07 -49	53.0 -2.9	28.52 -23	63.6 -2.6	1.50 -48	52.6 -2.7
16.0	13.06 -07	56.4 -2.6	32.65 -34	49.9 -2.2	28.23 -22	60.7 -2.1	1.07 -26	49.7 -2.0
26.0	13.06 +08	52.7 -2.7	32.38 -18	46.5 -2.4	28.05 -12	57.4 -2.4	0.77 -22	46.5 -2.2
36.0	13.21 +22	49.1 -2.6	32.29 -02	43.0 -2.5	27.97 -02	53.9 -2.5	0.69 -10	43.1 -2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Draconis.		♄ Cephei.		Groombridge 3241.		12 Yr. Catal. 1879.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 19 48	^m 69 55	^h 20 18	^m 77 18	^h 20 30	^m 72 4	^h 20 58	^m 60 2
Jan. 1.1	33.50 -18	57.6 -2.2	14.70 -4.4	48.8 -2.0	30.64 -3.1	67.8 -2.9	27.49 -7.7	83.7 -2.7
11.0	33.38 -07	54.2 2.4	14.34 .27	45.6 2.3	30.38 .20	64.7 2.2	26.82 .67	80.8 2.0
21.0	33.37 +05	50.7 2.5	14.16 -.08	42.2 2.4	30.23 -.08	61.3 2.4	26.26 .24	77.7 2.2
31.0	33.48 .17	47.3 2.4	14.18 +.11	38.8 2.4	30.22 +.06	57.9 2.4	26.14 -.10	74.4 2.4
Feb. 9.9	33.71 .26	44.0 2.2	14.38 .20	35.4 2.3	30.33 .18	54.5 2.2	26.15 +.14	70.9 2.4
19.9	34.05 .29	40.9 2.2	14.77 .48	32.2 2.0	30.58 .31	51.3 2.1	26.41 .28	67.7 2.2
Mar. 1.9	34.48 .48	38.2 2.4	15.33 .68	29.3 2.7	30.95 .42	48.3 2.2	26.90 .60	64.5 2.2
11.0	35.00 .65	36.1 1.9	16.03 .76	26.9 2.2	31.42 .62	45.8 2.2	27.60 .80	61.8 2.2
21.8	35.59 .01	34.5 1.3	16.86 .87	25.0 1.6	32.00 .61	43.7 1.6	28.49 .97	59.4 2.1
31.8	36.22 .06	33.5 -0.7	17.77 .95	23.6 1.0	32.64 .67	42.2 1.2	29.54 1.10	57.6 1.5
April 10.8	36.89 .67	33.2 0.0	18.76 1.00	22.9 -0.4	33.34 .72	41.3 -0.6	30.70 1.20	56.3 1.0
20.8	37.56 .67	33.5 +0.6	19.77 1.01	22.8 +0.2	34.08 .74	41.1 0.0	31.93 1.22	55.7 -0.2
30.7	38.22 .64	34.5 1.2	20.77 .99	23.4 0.6	34.82 .74	41.5 +0.7	33.20 1.26	55.6 +0.2
May 10.7	38.84 .60	36.0 1.2	21.74 .94	24.5 1.4	35.55 .71	42.5 1.2	34.46 1.22	56.2 0.9
20.7	39.41 .54	38.1 2.2	22.64 .86	26.3 1.9	36.24 .66	44.1 1.6	35.66 1.16	57.4 1.2
30.6	39.93 .47	40.6 2.7	23.45 .76	28.5 2.4	36.87 .60	46.2 2.2	36.78 1.06	59.2 2.0
June 9.6	40.36 .28	43.5 2.1	24.14 .62	31.1 2.2	37.43 .51	48.8 2.7	37.78 .98	61.4 2.4
19.6	40.69 .29	46.7 2.2	24.70 .48	34.1 2.1	37.92 .42	51.7 2.1	38.63 .77	64.0 2.2
29.6	40.93 .18	50.1 2.2	25.10 .32	37.3 2.2	38.27 .31	54.9 2.2	39.31 .69	67.0 2.1
July 9.5	41.05 +0.7	53.6 2.2	25.34 +.16	40.8 2.2	38.52 .20	58.4 2.2	39.81 .60	70.3 2.2
19.5	41.07 -.04	57.2 2.2	25.42 -.01	44.3 2.2	38.66 +.08	61.9 2.2	40.10 +.19	73.7 2.2
29.5	40.98 .15	60.6 2.4	25.32 .18	47.8 2.2	38.68 -.06	65.5 2.2	40.18 -.02	77.2 2.2
Aug. 8.4	40.78 .26	64.0 2.2	25.07 .24	51.2 2.4	38.57 .17	69.0 2.2	40.06 .22	80.9 2.2
18.4	40.47 .25	67.1 2.0	24.65 .49	54.5 2.2	38.35 .28	72.4 2.2	39.73 .42	84.4 2.4
28.4	40.08 .44	69.9 2.7	24.09 .68	57.6 2.9	38.01 .28	75.6 2.0	39.21 .61	87.7 2.2
Sept. 7.4	39.60 .51	72.4 2.2	23.39 .76	60.4 2.6	37.58 .48	78.5 2.2	38.51 .79	90.9 2.1
17.3	39.05 .58	74.5 1.9	22.57 .86	62.9 2.2	37.05 .56	81.2 2.4	37.64 .94	93.8 2.7
27.3	38.45 .62	76.1 1.4	21.66 .94	64.9 1.8	36.45 .63	83.4 2.0	36.62 1.08	96.4 2.4
Oct. 7.3	37.80 .65	77.2 0.8	20.67 1.01	66.5 1.2	35.79 .68	85.1 1.2	35.48 1.19	98.6 1.9
17.3	37.14 .61	77.9 +0.2	19.63 1.05	67.6 0.8	35.09 .71	86.4 1.0	34.25 1.27	100.3 1.2
27.2	36.47 .66	77.9 -0.2	18.57 1.06	68.1 +0.2	34.36 .72	87.2 +0.6	32.94 1.22	101.5 0.9
Nov. 6.2	35.82 .63	77.4 0.8	17.51 1.06	68.1 -0.2	33.63 .72	87.3 -0.1	31.61 1.22	102.2 +0.4
16.2	35.20 .60	76.4 1.2	16.48 1.00	67.5 0.9	32.91 .70	87.0 0.7	30.27 1.22	102.3 -0.2
26.1	34.64 .53	74.8 1.9	15.51 .92	66.4 1.4	32.23 .65	86.0 1.2	29.27 1.27	101.8 0.9
Dec. 6.1	34.15 .45	72.7 2.2	14.62 .83	64.7 2.0	31.61 .59	84.4 1.7	27.74 1.18	100.7 1.4
16.1	33.74 .36	70.1 2.7	13.86 .70	62.5 2.4	31.06 .50	82.4 2.2	26.62 1.06	99.1 1.9
26.1	33.43 .26	67.1 2.1	13.23 .55	59.8 2.2	30.61 .40	79.8 2.7	25.64 .89	96.9 2.4
36.0	33.23 -.12	63.8 -2.2	12.76 -.29	56.8 -2.1	30.26 -.29	76.9 -2.0	24.83 -.71	94.3 -2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cephei.		11 Cephei.		79 Draconis.		226 Cephei (B).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 21 ^m 26	[°] 69 ['] 58	^h 21 ^m 39	[°] 70 ['] 41	^h 21 ^m 51	[°] 73 ['] 4	^h 22 ^m 29	[°] 75 ['] 32
Jan. 1.1	54.39 -40	55.2 -2.4	56.44 -43	75.7 -2.3	11.43 -34	42.7 -2.1	55.08 -72	47.7 -1.6
11.1	54.04 -31	52.5 2.8	56.04 -25	73.2 2.7	10.93 -44	40.3 2.6	54.40 -63	45.8 2.1
21.1	53.78 -21	49.5 3.1	55.74 -26	70.3 3.0	10.54 -33	37.5 2.9	53.82 -52	43.4 2.6
31.0	53.62 -10	46.3 2.3	55.53 -14	67.1 2.2	10.27 -21	34.5 2.2	53.37 -38	40.7 2.9
Feb. 10.0	53.58 +01	43.0 2.3	55.46 -02	63.9 2.3	10.13 -07	31.2 2.3	53.05 -24	37.6 2.1
20.0	53.65 -12	39.7 2.2	55.49 +10	60.5 2.2	10.13 +06	27.9 2.2	52.89 -08	34.4 2.2
Mar. 2.0	53.84 -25	36.5 2.0	55.65 -22	57.3 2.1	10.26 -20	24.6 2.2	52.89 +06	31.1 2.2
11.9	54.14 -35	33.6 2.7	55.93 -23	54.4 2.8	10.53 -23	21.6 2.9	53.05 -24	27.9 2.1
21.9	54.55 -45	31.1 2.3	56.31 -43	51.7 2.4	10.93 -45	18.8 2.5	53.38 -40	25.0 2.6
31.9	55.04 -53	29.1 1.8	56.79 -52	49.6 1.9	11.44 -56	16.5 2.1	53.85 -54	22.3 2.4
April 10.9	55.61 -60	27.6 1.2	57.36 -60	47.9 1.4	12.06 -63	14.7 1.5	54.45 -66	20.1 2.0
20.8	56.23 -64	26.7 -0.6	57.99 -65	46.8 0.8	12.75 -72	13.5 0.9	55.16 -76	18.4 1.4
30.8	56.89 -67	26.4 0.0	58.67 -69	46.4 -0.1	13.49 -76	12.8 -0.2	55.97 -84	17.2 0.9
May 10.8	57.57 -68	26.7 +0.7	59.37 -70	46.6 +0.5	14.27 -78	12.8 +0.4	56.84 -89	16.6 -0.3
20.7	58.25 -66	27.7 1.2	60.07 -69	47.3 1.1	15.06 -78	13.4 0.9	57.75 -90	16.7 +0.2
30.7	58.90 -63	29.2 1.8	60.75 -66	48.7 1.6	15.83 -75	14.6 1.5	58.65 -90	17.3 0.9
June 9.7	59.50 -60	31.2 2.2	61.39 -61	50.6 2.1	16.56 -70	16.3 2.0	59.54 -86	18.5 1.5
19.7	60.05 -51	33.7 2.7	61.98 -55	53.0 2.6	17.23 -63	18.5 2.4	60.38 -81	20.3 2.0
29.6	60.52 -43	36.6 3.0	62.49 -47	55.8 3.0	17.83 -55	21.2 2.8	61.15 -73	22.5 2.4
July 9.6	60.90 -35	39.8 3.2	62.91 -38	58.9 2.2	18.33 -45	24.2 2.2	61.83 -63	25.2 2.6
19.6	61.19 -24	43.2 2.5	63.25 -28	62.2 2.5	18.73 -34	27.5 2.4	62.41 -52	28.2 2.2
29.6	61.38 -13	46.8 2.6	63.48 -17	65.8 2.6	19.01 -22	31.0 2.6	62.86 -39	31.5 2.4
Aug. 8.5	61.45 +02	50.4 2.6	63.59 +06	69.4 2.6	19.17 +10	34.6 2.7	63.19 -26	35.0 2.6
18.5	61.43 -06	54.0 2.6	63.60 -06	73.1 2.6	19.21 -02	38.3 2.7	63.38 +12	38.7 2.7
28.5	61.29 -18	57.6 2.4	63.50 -15	76.7 2.5	19.12 -14	41.9 2.6	63.44 -01	42.4 2.7
Sept. 7.4	61.06 -28	60.9 2.2	63.30 -25	80.1 2.2	18.99 -26	45.4 2.4	63.35 -15	46.1 2.6
17.4	60.74 -37	64.0 2.6	63.00 -24	83.3 2.1	18.61 -36	48.8 2.2	63.14 -28	49.7 2.5
27.4	60.33 -44	66.8 2.6	62.61 -23	86.3 2.2	18.20 -46	51.9 2.9	62.80 -40	53.1 2.2
Oct. 7.4	59.85 -51	69.3 2.2	62.14 -20	88.9 2.4	17.69 -54	54.6 2.6	62.34 -51	56.2 2.0
17.3	59.31 -56	71.3 1.6	61.61 -55	91.1 2.0	17.11 -61	57.0 2.1	61.78 -61	59.0 2.6
27.3	58.73 -69	72.8 1.2	61.03 -60	92.8 1.5	16.46 -67	58.9 1.7	61.13 -69	61.5 2.2
Nov. 6.3	58.13 -61	73.8 0.7	60.42 -62	94.0 0.9	15.77 -70	60.3 1.1	60.40 -76	63.4 1.6
16.3	57.51 -52	74.2 +0.1	59.79 -63	94.6 +0.3	15.06 -72	61.1 +0.5	59.61 -80	64.9 1.2
26.2	56.90 -40	74.1 -0.5	59.15 -62	94.7 -0.3	14.33 -72	61.4 -0.1	58.79 -83	65.7 +0.6
Dec. 6.2	56.31 -27	73.3 1.1	58.54 -60	94.1 0.9	13.62 -70	61.0 0.7	57.96 -83	66.0 0.0
16.2	55.76 -52	72.0 1.6	57.96 -55	92.9 1.4	12.94 -66	60.1 1.2	57.13 -81	65.7 -0.6
26.1	55.28 -46	70.1 2.1	57.43 -60	91.2 2.0	12.31 -69	58.5 1.8	56.34 -76	64.7 1.2
36.1	54.86 -37	67.7 -2.5	56.97 -63	89.0 -2.5	11.76 -61	56.5 -2.2	55.60 -69	63.2 -1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Cephei.		ο Cephei.		γ Cephei.		Groombridge 4163.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 22 ^m 44	[°] 65 ['] 29	^h 23 ^m 13	[°] 67 ['] 22	^h 23 ^m 33	[°] 76 ['] 53	^h 23 ^m 48	[°] 73 ['] 40
Jan. 1.2	56.81 -40	83.2 -1.5	10.77 -46	80.5 -1.3	55.66 -87	44.3 -0.8	24.66 -70	31.4 -0.6
11.2	56.44 -35	81.4 -4.0	10.33 -42	79.0 -1.7	54.81 -82	43.2 -1.3	23.99 -66	30.5 -1.2
21.1	56.11 -29	79.1 -2.5	9.92 -37	77.1 -2.2	54.02 -75	41.7 -1.9	23.35 -60	29.0 -1.7
31.1	55.85 -22	76.5 -2.8	9.58 -30	74.7 -2.6	53.32 -64	39.5 -2.3	22.78 -52	27.0 -2.2
Feb. 10.1	55.67 -14	73.5 -3.0	9.32 -22	71.9 -2.9	52.75 -50	37.0 -2.7	22.30 -43	24.6 -2.6
20.1	55.57 -06	70.4 -3.1	9.14 -13	69.0 -3.0	52.31 -35	34.1 -3.0	21.92 -31	21.8 -2.9
Mar. 2.0	55.56 +04	67.3 -3.1	9.05 -03	65.9 -3.1	52.05 -18	31.0 -3.1	21.67 -18	18.8 -2.1
12.0	55.64 -13	64.2 -3.0	9.07 +07	62.8 -3.0	51.96 -00	27.9 -3.2	21.56 -04	15.7 -3.1
22.0	55.83 -22	61.4 -2.7	9.20 -18	59.8 -2.8	52.05 +18	24.7 -3.1	21.60 +11	12.6 -3.0
31.9	56.10 -32	58.8 -2.3	9.43 -26	57.1 -2.6	52.32 -36	21.7 -2.6	21.78 -25	9.6 -2.8
April 10.9	56.46 -40	56.7 -1.9	9.75 -37	54.7 -2.2	52.76 -52	19.0 -2.8	22.10 -39	6.9 -2.3
20.9	56.89 -46	55.1 -1.4	10.17 -45	52.8 -1.7	53.36 -66	16.7 -2.1	22.55 -51	4.6 -2.2
30.9	57.38 -52	54.0 -0.8	10.66 -52	51.4 -1.2	54.09 -79	14.8 -1.6	23.12 -62	2.6 -1.7
May 10.8	57.93 -56	53.5 -0.2	11.21 -57	50.5 -0.6	54.93 -89	13.4 -1.1	23.79 -71	1.2 -1.3
20.8	58.50 -58	53.6 +0.4	11.81 -61	50.2 -0.0	55.86 -98	12.7 -0.5	24.54 -77	0.3 -0.6
30.8	59.08 -58	54.2 -1.0	12.43 -63	50.5 +0.6	56.84 -99	12.4 +0.1	25.33 -81	0.0 -0.0
June 9.8	59.66 -57	55.5 -1.5	13.06 -62	51.4 -1.1	57.84 -100	12.8 -0.7	26.17 -83	0.2 +0.3
19.7	60.22 -50	57.2 -2.0	13.67 -61	52.8 -1.7	58.84 -98	13.7 -1.2	27.00 -82	1.0 -1.1
29.7	60.74 -44	59.5 -2.4	14.27 -57	54.7 -2.1	59.81 -94	15.2 -1.7	27.81 -69	2.4 -1.6
July 9.7	61.22 -44	62.1 -2.8	14.82 -52	57.0 -2.3	60.71 -87	17.2 -2.2	28.59 -75	4.2 -2.1
19.6	61.63 -38	65.1 -3.1	15.31 -46	59.7 -2.9	61.54 -78	19.6 -2.6	29.30 -68	6.5 -2.3
29.6	61.97 -30	63.3 -3.4	15.73 -39	62.8 -3.2	62.27 -67	22.4 -3.0	29.94 -60	9.3 -2.9
Aug. 8.6	62.23 -22	71.8 -3.3	16.08 -31	66.1 -3.4	62.88 -53	25.6 -3.3	30.50 -50	12.3 -2.3
18.6	62.41 -14	75.3 -3.6	16.34 -22	69.6 -3.3	63.36 -41	29.0 -3.6	30.95 -40	15.6 -2.4
28.5	62.51 +03	78.9 -3.0	16.52 -13	73.2 -3.6	63.71 -28	32.6 -3.6	31.29 -29	19.1 -2.6
Sept. 7.5	62.52 -03	82.5 -3.5	16.61 +05	76.8 -3.6	63.91 +13	36.2 -3.7	31.53 -17	22.8 -2.7
17.5	62.45 -11	86.0 -3.4	16.61 -04	80.4 -3.3	63.98 -01	40.0 -3.7	31.64 +06	26.4 -2.7
27.5	62.30 -18	89.3 -3.2	16.52 -18	83.9 -3.4	63.90 -13	43.7 -3.8	31.64 -06	30.1 -2.6
Oct. 7.4	62.08 -25	92.4 -2.9	16.36 -20	87.1 -3.1	63.68 -29	47.2 -3.4	31.53 -17	33.6 -2.3
17.4	61.80 -31	95.1 -2.5	16.12 -27	90.1 -2.8	63.32 -42	50.5 -3.2	31.31 -27	37.0 -2.2
27.4	61.46 -38	97.4 -2.1	15.81 -34	92.8 -2.4	62.84 -54	53.6 -2.9	30.98 -37	40.1 -2.9
Nov. 6.3	61.07 -40	99.3 -1.6	15.44 -38	95.0 -2.0	62.24 -63	56.4 -2.6	30.56 -46	42.8 -2.8
16.3	60.65 -43	100.7 -1.1	15.03 -43	96.7 -1.6	61.55 -74	58.7 -2.1	30.06 -54	45.2 -2.1
26.3	60.21 -45	101.5 +0.6	14.57 -47	98.0 -1.0	60.77 -81	60.5 -1.6	29.48 -61	47.1 -1.6
Dec. 6.3	59.75 -45	101.8 -0.0	14.09 -49	98.7 +0.4	59.92 -86	61.7 -0.9	28.84 -66	48.4 -1.6
16.2	59.30 -43	101.4 -0.6	13.60 -49	98.8 -0.2	59.04 -89	62.3 +0.3	28.16 -69	49.1 +0.4
26.2	58.86 -42	100.5 -1.2	14.12 -48	98.3 -0.8	58.14 -89	62.3 -0.3	27.47 -70	49.2 -0.2
36.2	58.45 -38	99.0 -1.7	13.65 -45	97.2 -1.4	57.26 -87	61.7 -0.9	26.77 -69	48.7 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ρ Hydri.		Mean Solar Date.	ρ Chamæleontis.	
	Right Ascension.	Declination South.		Right Ascension.	Declination South.
	^h ^m 0 18	[°] ['] 77 59		^h ^m 12 10	[°] ['] 78 34
Jan. 0.2	39.47 -98	96.3 -0.7	Jan. 0.7	40.00 +1.21	5.8 +1.4
10.2	38.55 -88	95.2 1.3	10.7	41.17 1.12	7.5 2.0
20.2	37.70 -81	93.6 1.9	20.7	42.24 1.01	9.8 2.5
30.1	36.93 -73	91.4 2.4	30.6	43.20 -89	12.5 2.9
Feb. 9.1	36.27 -60	88.8 2.8	Feb. 9.6	44.03 -75	15.6 3.3
19.1	35.73 -48	85.8 3.2	19.6	44.70 -59	19.1 3.5
Mar. 1.1	35.33 -33	82.5 3.5	Mar. 1.6	45.20 -42	22.7 3.7
11.0	35.08 -18	78.9 3.6	11.5	45.54 -25	26.4 3.8
21.0	34.98 -03	75.2 3.7	21.5	45.71 + -08	30.2 3.8
31.0	35.04 +13	71.4 3.8	31.5	45.71 - -08	33.9 3.7
Apr. 10.0	35.26 -29	67.6 3.7	Apr. 10.5	45.55 -23	37.5 3.5
19.9	35.64 -45	64.0 3.6	20.4	45.24 -88	40.9 3.3
29.9	36.17 -60	60.5 3.4	30.4	44.79 -82	44.0 3.0
May 9.9	36.84 -73	57.3 3.0	May 10.4	44.21 -63	46.8 2.6
19.8	37.64 -88	54.4 2.7	20.3	43.52 -74	49.1 2.3
29.8	38.55 -96	51.8 2.3	30.3	42.73 -82	51.0 1.7
June 8.8	39.55 1.04	49.8 1.8	June 9.3	41.87 -89	52.4 1.2
18.8	40.62 1.09	48.2 1.3	19.3	40.95 -94	53.3 0.7
28.7	41.73 1.12	47.2 0.8	29.2	40.00 -96	53.7 +0.1
July 8.7	42.85 1.11	46.7 -0.2	July 9.2	39.04 -95	53.5 -0.5
18.7	43.95 1.07	46.8 +0.4	19.2	38.10 -91	52.7 1.0
28.7	44.99 1.01	47.4 0.9	29.2	37.21 -85	51.5 1.5
Aug. 7.6	45.96 -91	48.7 1.5	Aug. 8.1	36.40 -76	49.7 2.0
17.6	46.81 -78	50.4 2.0	18.1	35.70 -68	47.5 2.4
27.6	47.52 -63	52.6 2.4	28.1	35.13 -49	44.9 2.7
Sept. 6.5	48.07 -46	55.2 2.7	Sept. 7.1	34.73 -31	42.0 2.9
16.5	48.44 -28	58.1 3.0	17.0	34.50 -13	39.0 2.1
26.5	48.63 +09	61.1 3.1	27.0	34.48 + -08	35.9 2.1
Oct. 6.5	48.62 -11	64.3 3.1	Oct. 7.0	34.66 -28	32.9 2.0
16.4	48.41 -30	67.3 3.0	16.9	35.04 -49	30.0 2.8
26.4	48.03 -46	70.3 2.8	26.9	35.63 -68	27.4 2.4
Nov. 5.4	47.49 -62	72.9 2.4	Nov. 5.9	36.40 -85	25.2 2.0
15.4	46.80 -75	75.1 2.0	15.9	37.33 1.00	23.5 1.5
25.3	46.00 -84	76.9 1.5	25.8	38.39 1.11	22.4 0.9
Dec. 5.3	45.12 -90	78.1 0.9	Dec. 5.8	39.55 1.18	21.9 -0.2
15.3	44.23 -94	78.6 +0.3	15.8	40.75 1.21	22.0 +0.4
25.2	43.25 -94	78.6 -0.3	25.7	41.98 1.21	22.7 1.0
35.2	42.32 -92	77.9 -1.0	35.7	43.17 +1.17	24.1 +1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		Mean Solar Date.	σ Octantis.	
	Right Ascension.	Declination South.		Right Ascension.	Declination South.
	^h ^m 16 34	[°] ['] 68 46		^h 17	[°] ['] 89 16
Jan. 0.9	34.09 +.84	23.5 -1.7	Jan. 1.0	^m ^s 59 7.58 + 7.00	30.0 -2.2
10.9	34.67 -.61	21.9 1.4	10.9	59 16.25 10.25	26.9 2.0
20.8	35.32 -.67	20.7 1.0	20.9	59 27.92 12.01	24.1 2.6
30.8	36.02 -.78	19.9 0.6	30.9	59 42.13 13.25	21.7 2.3
Feb. 9.8	36.77 -.75	19.5 -0.2	Feb. 9.9	59 58.49 17.29	19.6 1.0
19.8	37.52 -.75	19.6 +0.3	19.8	60 16.56 18.75	18.0 1.4
Mar. 1.7	38.27 -.75	20.0 0.0	Mar. 1.8	60 35.83 19.74	16.8 0.9
11.7	39.02 -.78	20.8 1.0	11.7	60 55.88 20.27	16.1 -0.4
21.7	39.73 -.60	21.9 1.4	21.7	61 16.22 20.35	15.9 +0.1
31.7	40.41 -.65	23.6 1.7	31.7	61 36.42 19.97	16.2 0.5
Apr. 10.6	41.03 -.60	25.4 1.0	Apr. 10.7	61 56.01 19.17	16.9 1.0
20.6	41.60 -.88	27.4 2.2	20.7	62 14.63 17.99	18.2 1.5
30.6	42.10 -.45	29.7 2.4	30.6	62 31.86 16.40	19.8 1.0
May 10.5	42.53 -.88	32.1 2.5	May 10.6	62 47.32 14.47	21.9 2.2
20.5	42.86 -.80	34.7 2.6	20.6	63 0.71 13.27	24.2 2.5
30.5	43.13 -.31	37.3 2.6	30.6	63 11.76 9.75	26.9 2.8
June 9.5	43.23 .11	39.9 2.6	June 9.5	63 20.13 7.00	29.8 2.0
19.4	43.34 +.01	42.4 2.5	19.5	63 25.71 4.18	32.8 2.1
29.4	43.30 -.00	44.9 2.3	29.5	63 28.35 + 1.17	36.0 2.1
July 9.4	43.16 .19	47.1 2.1	July 9.4	63 27.96 - 1.08	39.1 2.1
19.4	42.93 .28	49.0 1.8	19.4	63 24.54 4.02	42.1 2.0
29.3	42.60 .35	50.7 1.5	29.4	63 18.19 7.75	44.9 2.7
Aug. 8.3	42.21 .43	52.0 1.1	Aug. 8.4	63 9.13 10.33	47.4 2.4
18.3	41.75 .48	52.9 0.6	18.3	62 57.63 12.01	49.6 2.0
28.2	41.24 .52	53.3 +0.2	28.3	62 44.06 14.45	51.4 1.5
Sept. 7.2	40.72 .53	53.2 -0.3	Sept. 7.3	62 28.89 15.02	52.6 1.0
17.2	40.19 .52	52.7 0.6	17.3	62 12.62 16.00	53.3 +0.4
27.2	39.68 .48	51.6 1.2	27.2	61 55.90 16.77	53.3 -0.2
Oct. 7.1	39.23 .43	50.2 1.6	Oct. 7.2	61 39.31 16.22	52.8 0.8
17.1	38.83 .41	48.4 2.0	17.2	61 23.63 16.17	51.7 1.4
27.1	38.55 .34	46.2 2.3	27.1	61 9.19 12.48	50.0 1.0
Nov. 6.1	38.37 -.12	43.8 2.4	Nov. 6.1	60 56.88 11.13	47.8 2.4
16.0	38.30 .00	41.3 2.5	16.1	60 47.09 8.25	45.2 2.8
26.0	38.37 +.12	38.8 2.5	26.1	60 40.30 5.25	42.3 2.0
Dec. 6.0	38.55 .25	36.3 2.4	Dec. 6.0	60 36.68 - 1.00	39.1 2.3
15.9	38.87 .37	33.9 2.2	16.0	60 36.56 + 1.07	35.9 2.3
25.9	39.29 .48	31.8 1.9	26.0	60 39.94 4.08	32.6 2.3
35.9	39.82 +.66	30.1 -1.5	36.0	60 46.36 + 7.01	29.4 -2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α ANDROMEDA.		γ PEGASI. (Algenib.)		α CASSIOPEA.		β Ceti.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 0	^m 1	^h 0	^m 6	^h 0	^m 32	^h 0	^m 36
		29° 21'		14° 26'		55° 48'		18° 42'
Jan. 0.2	31.13	-15	23.33	-13	50.48	-29	54.46	-13
10.2	30.96	-14	23.21	-12	50.19	-29	54.32	-13
20.2	30.84	-13	23.09	-11	50.00	-29	54.19	-13
30.2	30.71	-12	22.98	-10	50.02	-27	54.07	-12
Feb. 9.1	30.60	-10	22.88	-08	50.36	-24	53.96	-10
19.1	30.52	-07	22.81	-06	50.15	-19	53.86	-06
Mar. 1.1	30.47	-03	22.77	-00	50.98	-14	53.79	-06
11.0	30.45	+01	22.76	+00	50.87	-07	53.75	-03
21.0	30.48	+03	22.78	+04	50.83	+00	53.74	+01
31.0	30.55	+09	22.84	+08	50.87	+07	53.77	+06
April 10.0	30.67	-14	22.95	-13	50.97	-14	53.84	-09
19.9	30.83	-19	23.10	-17	50.16	-22	53.95	-13
29.9	31.04	-28	23.23	-21	50.41	-28	54.10	-17
May 9.9	31.28	-36	23.51	-34	50.72	-34	54.30	-21
19.9	31.56	-39	23.76	-37	50.09	-30	54.53	-25
29.8	31.87	-32	24.04	-29	50.50	-23	54.79	-27
June 8.8	32.19	-23	24.34	-21	50.95	-16	55.08	-20
18.8	32.53	-13	24.65	-11	50.41	-07	55.39	-11
28.7	32.86	-03	24.97	-01	50.89	-07	55.70	-01
July 8.7	33.18	-23	25.27	-20	51.35	-16	56.01	-21
18.7	33.49	-30	25.56	-28	51.80	-23	56.32	-30
28.7	33.77	-37	25.83	-36	52.22	-30	56.61	-38
Aug. 7.6	34.02	-23	26.07	-22	52.60	-23	56.88	-26
17.6	34.24	-20	26.28	-19	52.93	-21	57.13	-23
27.6	34.41	-16	26.45	-15	53.22	-16	57.33	-19
Sept. 6.6	34.55	-12	26.59	-12	53.45	-10	57.50	-16
16.5	34.64	-07	26.69	-08	53.63	-13	57.64	-11
26.5	34.70	+03	26.75	-04	53.74	-09	57.73	-07
Oct. 6.5	34.71	-09	26.77	+01	53.80	+08	57.78	+04
16.4	34.69	-03	26.76	-03	53.81	-02	57.80	-00
26.4	34.64	-06	26.72	-05	53.76	-07	57.78	-03
Nov. 5.4	34.57	-09	26.66	-07	53.66	-12	57.74	-06
15.4	34.47	-11	26.58	-09	53.52	-17	57.67	-08
25.3	34.35	-13	26.48	-10	53.33	-21	57.58	-10
Dec. 5.3	34.22	-14	26.37	-12	53.10	-24	57.47	-11
15.3	34.08	-16	26.25	-12	52.85	-26	57.35	-12
25.3	33.93	-15	26.13	-13	52.57	-28	57.22	-13
35.2	33.78	-13	26.00	-12	52.28	-30	57.09	-14

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Piscium.		♋ Ceti.		♊ Piscium.		♏ Eridani. (Achernar.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 0 56	^m 7 10	^h 1 17	^m 8 51	^h 1 24	^m 14 39	^h 1 32	^m 57 54
Jan. 0.3	2.78 -12	22.6 -0.7	22.67 -12	82.1 +0.9	22.55 -12	32.9 -0.5	44.56 -33	68.3 +0.7
10.2	2.65 -13	21.8 -0.8	22.55 -13	82.9 -0.7	22.42 -13	32.3 -0.7	44.62 -34	68.7 +0.2
20.2	2.53 -13	21.1 -0.8	22.41 -13	83.5 -0.5	22.29 -14	31.6 -0.8	44.28 -34	68.6 -0.4
30.2	2.40 -13	20.3 -0.7	22.28 -13	83.9 -0.3	22.14 -14	30.8 -0.8	43.95 -33	67.9 -1.0
Feb. 9.2	2.28 -11	19.6 -0.7	22.15 -12	84.1 +0.1	22.01 -13	29.9 -0.9	43.63 -31	66.7 -1.5
19.1	2.17 -09	19.0 -0.6	22.03 -11	84.1 -0.1	21.88 -12	29.1 -0.8	43.33 -29	64.9 -2.0
Mar. 1.1	2.09 -07	18.4 -0.5	21.93 -09	83.9 -0.3	21.77 -10	28.3 -0.8	43.08 -24	62.8 -2.4
11.1	2.03 -04	18.1 -0.3	21.85 -06	83.4 -0.6	21.68 -07	27.5 -0.7	42.86 -19	60.2 -2.7
21.1	2.01 -01	17.8 -0.1	21.80 -03	82.7 -0.8	21.63 -03	26.9 -0.5	42.70 -13	57.3 -2.9
31.0	2.02 +03	17.8 +0.1	21.79 +01	81.8 -1.1	21.61 +01	26.5 -0.3	42.59 -07	54.1 -2.3
April 10.0	2.07 -07	18.1 -0.4	21.82 -05	80.6 -1.3	21.64 -05	26.3 -0.1	42.56 -01	50.7 -2.4
20.0	2.17 -12	18.6 -0.6	21.89 -09	79.2 -1.5	21.71 -09	26.3 +0.1	42.58 +06	47.2 -2.5
30.9	2.31 -16	19.3 -0.9	22.00 -14	77.6 -1.7	21.82 -14	26.5 -0.4	42.69 -14	43.7 -2.6
May 9.9	2.49 -20	20.3 -1.1	22.16 -18	75.8 -1.9	21.99 -18	27.1 -0.7	42.86 -21	40.1 -2.8
19.9	2.70 -23	21.6 -1.4	22.36 -21	73.8 -2.0	22.19 -22	27.9 -0.9	43.09 -27	36.7 -2.3
29.9	2.95 -26	23.1 -1.6	22.59 -24	71.7 -2.1	22.43 -26	28.9 -1.3	43.40 -33	33.5 -2.1
June 8.8	3.23 -28	24.7 -1.7	22.85 -27	69.6 -2.1	22.69 -28	30.3 -1.4	43.75 -39	30.5 -2.6
18.8	3.52 -30	26.5 -1.8	23.13 -29	67.5 -2.1	22.98 -30	31.8 -1.6	44.16 -42	27.9 -2.4
28.8	3.83 -31	28.4 -1.9	23.43 -30	65.4 -2.0	23.29 -31	33.4 -1.7	44.60 -45	25.6 -2.4
July 8.8	4.13 -30	30.3 -1.9	23.73 -30	63.4 -1.9	23.60 -31	35.2 -1.8	45.06 -47	23.8 -1.5
18.7	4.44 -29	32.3 -1.9	24.03 -30	61.6 -1.7	23.91 -30	37.0 -1.9	45.54 -47	22.6 -1.9
28.7	4.72 -28	34.1 -1.8	24.33 -29	60.0 -1.6	24.21 -29	38.9 -1.9	46.01 -47	21.8 -0.4
Aug. 7.7	4.99 -25	35.9 -1.7	24.60 -27	58.7 -1.3	24.50 -27	40.8 -1.8	46.47 -46	21.7 +0.1
17.6	5.23 -23	37.5 -1.3	24.86 -24	57.6 -0.9	24.76 -25	42.5 -1.7	46.90 -41	22.1 -0.7
27.6	5.44 -20	38.9 -1.3	25.09 -21	56.9 -0.8	24.99 -23	44.3 -1.6	47.30 -37	23.1 -1.2
Sept. 6.6	5.62 -18	40.1 -1.1	25.28 -18	56.4 -0.3	25.20 -19	45.7 -1.4	47.64 -31	24.6 -1.7
16.6	5.76 -13	41.1 -0.9	25.45 -15	56.3 -0.0	25.37 -10	47.0 -1.2	47.92 -25	26.6 -2.2
26.5	5.87 -09	41.9 -0.6	25.58 -11	56.4 +0.3	25.51 -12	48.2 -1.0	48.14 -18	28.9 -2.3
Oct. 6.5	5.95 -06	42.4 -0.4	25.67 -08	56.9 -0.6	25.62 -09	49.1 -0.8	48.28 -11	31.6 -2.8
16.5	5.99 +03	42.7 +0.2	25.73 -05	57.6 -0.8	25.69 -06	49.9 -0.6	48.36 +04	34.5 -2.9
26.5	6.00 -00	42.8 -0.0	25.76 +02	58.4 -0.9	25.74 +03	50.4 -0.5	48.37 -03	37.5 -2.0
Nov. 5.4	5.99 -03	42.8 -0.3	25.76 -01	59.5 -1.0	25.75 -00	50.8 -0.3	48.31 -09	40.4 -2.3
15.4	5.95 -08	42.5 -0.3	25.73 -04	60.6 -1.1	25.74 -08	50.9 +0.1	48.18 -15	43.3 -2.7
25.4	5.89 -07	42.2 -0.4	25.68 -06	61.7 -1.1	25.70 -06	50.9 -0.1	48.06 -20	45.8 -2.4
Dec. 5.3	5.81 -00	41.7 -0.3	25.61 -08	62.8 -1.1	25.63 -07	50.8 -0.2	47.77 -26	48.1 -2.8
15.3	5.71 -10	41.1 -0.6	25.52 -10	63.9 -1.0	25.55 -09	50.5 -0.4	47.50 -29	49.9 -1.3
25.3	5.60 -11	40.4 -0.7	25.41 -11	64.8 -0.9	25.44 -11	50.1 -0.5	47.20 -31	51.2 -1.0
35.3	5.48 -12	39.7 -0.7	25.29 -12	65.7 +0.8	25.32 -12	49.5 -0.6	46.88 -33	51.9 +0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Piscium.		♈ Arietis.		♈ ARIETIS.		♈ Ceti (ξ').	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 1 38	^m 8 29	^h 1 47	^m 20 9	^h 1 59	^m 22 49	^h 2 5	^m 8 13
Jan. 0.3	22.86	-13	11.1	-0.7	18.46	-12	57.74	-11
10.3	22.73	-12	10.4	0.7	18.33	-14	57.62	-12
20.2	22.60	-14	9.7	0.7	18.19	-15	57.49	-14
30.2	22.46	-14	9.0	0.7	18.04	-15	57.34	-15
Feb. 9.2	22.32	-12	8.4	0.6	17.88	-15	57.19	-15
19.2	22.19	-12	7.7	0.6	17.74	-14	57.05	-14
Mar. 1.1	22.08	-10	7.2	0.6	17.61	-12	56.91	-12
11.1	21.98	-08	6.8	0.3	17.50	-09	56.80	-10
21.1	21.92	-05	6.5	-0.2	17.42	-06	56.71	-07
31.1	21.89	-01	6.5	0.0	17.38	-02	56.65	-03
April 10.0	21.90	+02	6.6	+0.2	17.38	+02	56.64	+01
20.0	21.95	-02	6.9	0.2	17.43	-07	56.67	-02
30.0	22.05	-12	7.6	0.7	17.53	-12	56.74	-10
May 9.9	22.20	-12	8.4	1.0	17.67	-17	56.86	-14
19.9	22.38	-20	9.5	1.2	17.86	-21	57.02	-18
29.9	22.61	-24	10.8	1.4	18.09	-25	57.22	-22
June 8.9	22.86	-27	12.3	1.6	18.35	-28	57.46	-25
18.8	23.14	-29	13.0	1.7	18.64	-30	57.72	-27
28.8	23.43	-30	15.7	1.8	18.95	-31	58.00	-29
July 8.8	23.74	-30	17.5	1.8	19.26	-32	58.30	-30
18.8	24.04	-30	19.4	1.8	19.58	-32	58.61	-30
28.7	24.34	-29	21.1	1.7	19.89	-31	58.91	-30
Aug. 7.7	24.63	-23	22.0	1.6	20.19	-29	59.20	-28
17.7	24.80	-25	24.4	1.6	20.47	-27	59.47	-27
27.6	25.13	-28	25.0	1.8	20.73	-24	59.73	-25
Sept. 6.6	25.35	-20	27.1	1.1	20.96	-21	59.96	-22
16.6	25.53	-17	28.1	0.9	21.16	-18	60.17	-19
26.6	25.63	-12	28.9	0.7	21.32	-15	60.34	-16
Oct. 6.5	25.80	-10	29.4	0.8	21.46	-12	60.49	-13
16.5	25.88	-07	29.8	0.8	21.56	-08	60.60	-10
26.5	25.94	-04	30.0	+0.1	21.63	-05	60.69	-07
Nov. 5.5	25.97	+01	29.9	-0.1	21.67	+02	60.74	-04
15.4	25.97	-01	29.7	0.3	21.68	-01	60.77	+01
25.4	25.94	-04	29.4	0.4	21.66	-03	60.76	-02
Dec. 5.4	25.80	-06	29.0	0.5	21.61	-05	60.73	-04
15.3	25.81	-08	28.5	0.5	21.54	-09	60.68	-07
25.3	25.72	-10	27.9	0.6	21.44	-11	60.60	-09
35.3	25.61	-12	27.3	-0.7	21.32	-13	60.49	-12

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α CETI.		ζ Arietis.		α PERSEI.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 2 ^m 36	[°] 2 ['] 40	^h 2 ^m 55	[°] 3 ['] 33	^h 3 ^m 7	[°] 20 ['] 32	^h 3 ^m 14	[°] 49 ['] 22
Jan. 0.3	25.36 -09	16.8 -0.8	20.53 -08	50.3 -0.8	16.68 -08	55.5 -0.2	52.21 -14	60.2 +1.1
10.3	25.25 -13	16.1 -0.7	20.43 -11	49.5 -0.7	16.58 -11	55.3 -0.2	52.05 -18	70.1 -0.8
20.3	25.12 -14	15.3 -0.7	20.31 -13	48.8 -0.7	16.46 -14	55.1 -0.3	51.85 -22	70.7 +0.4
30.3	24.98 -15	14.7 -0.6	20.17 -15	48.2 -0.6	16.31 -16	54.7 -0.4	51.62 -26	71.0 -0.0
Feb. 9.2	24.83 -15	14.2 -0.6	20.01 -16	47.7 -0.6	16.14 -17	54.2 -0.6	51.35 -27	70.8 -0.3
19.2	24.67 -15	13.8 -0.6	19.85 -16	47.3 -0.4	15.97 -17	53.6 -0.6	51.08 -27	70.3 -0.7
Mar. 1.2	24.52 -14	13.5 -0.2	19.69 -16	47.0 -0.2	15.79 -17	53.0 -0.6	50.81 -28	69.4 -1.0
11.2	24.39 -12	13.4 -0.1	19.55 -14	46.8 -0.1	15.63 -18	52.3 -0.6	50.56 -24	68.2 -1.3
21.1	24.27 -10	13.4 +0.1	19.42 -11	46.8 +0.1	15.49 -19	51.7 -0.6	50.33 -20	66.7 -1.6
31.1	24.19 -08	13.6 -0.3	19.33 -08	47.0 -0.3	15.38 -09	51.1 -0.6	50.15 -18	65.0 -1.7
April 10.1	24.15 -02	14.1 -0.6	19.26 -04	47.3 -0.6	15.30 -08	50.6 -0.6	50.03 -09	63.3 -1.8
20.0	24.14 +02	14.7 -0.7	19.24 -00	47.9 -0.7	15.27 -01	50.2 -0.8	49.96 -03	61.5 -1.6
30.0	24.18 -06	15.6 -1.0	19.27 +00	48.7 -0.9	15.29 +04	50.0 -0.1	49.97 +04	59.7 -1.7
May 10.0	24.27 -11	16.6 -1.2	19.34 -09	49.7 -1.1	15.35 -09	49.9 -0.0	50.04 -10	58.0 -1.6
20.0	24.40 -15	17.9 -1.4	19.45 -13	50.8 -1.3	15.47 -14	50.0 +0.2	50.17 -17	56.5 -1.4
29.9	24.57 -19	19.3 -1.5	19.60 -18	52.2 -1.4	15.63 -18	50.4 -0.5	50.38 -22	55.2 -1.1
June 8.9	24.78 -22	20.9 -1.6	19.80 -21	53.7 -1.6	15.83 -22	51.0 -0.7	50.64 -29	54.2 -0.8
18.9	25.02 -25	22.6 -1.7	20.03 -24	55.3 -1.7	16.07 -26	51.8 -0.9	50.96 -32	53.5 -0.8
28.9	25.29 -27	24.4 -1.8	20.29 -27	57.0 -1.7	16.34 -28	52.7 -1.0	51.31 -37	53.1 -0.2
July 8.8	25.57 -29	26.2 -1.8	20.56 -28	58.8 -1.7	16.63 -30	53.9 -1.2	51.70 -40	53.1 +0.1
18.8	25.87 -30	28.0 -1.7	20.85 -29	60.5 -1.7	16.94 -31	55.1 -1.3	52.11 -42	53.4 -0.8
28.8	26.16 -29	29.6 -1.6	21.15 -28	62.1 -1.6	17.25 -31	56.4 -1.4	52.53 -42	54.0 -0.8
Aug. 7.7	26.46 -29	31.2 -1.5	21.44 -29	63.6 -1.4	17.56 -31	57.8 -1.4	52.96 -42	54.9 -1.0
17.7	26.74 -28	32.6 -1.3	21.73 -28	65.0 -1.3	17.87 -30	59.2 -1.4	53.38 -42	56.1 -1.3
27.7	27.01 -26	33.7 -1.0	22.01 -27	66.2 -1.0	18.16 -29	60.6 -1.3	53.79 -40	57.5 -1.6
Sept. 6.7	27.25 -24	34.6 -0.8	22.26 -26	67.1 -0.8	18.44 -27	61.8 -1.2	54.18 -39	59.2 -1.7
16.6	27.48 -21	35.3 -0.5	22.50 -22	67.8 -0.6	18.70 -25	63.0 -1.1	54.55 -34	61.0 -1.9
26.6	27.63 -18	35.7 +0.3	22.71 -20	68.2 -0.3	18.94 -22	64.1 -1.0	54.88 -29	62.9 -2.0
Oct. 6.6	27.85 -16	35.9 -0.0	22.90 -17	68.4 +0.1	19.15 -20	65.1 -0.9	55.19 -23	65.0 -2.1
16.6	27.99 -13	35.8 -0.2	23.06 -15	68.3 -0.2	19.34 -17	65.9 -0.8	55.45 -20	67.1 -2.2
26.5	28.10 -10	35.5 -0.4	23.19 -12	68.0 -0.4	19.49 -14	66.6 -0.6	55.68 -16	69.3 -2.2
Nov. 5.5	28.19 -07	35.0 -0.6	23.29 -09	67.6 -0.6	19.62 -11	67.1 -0.5	55.96 -12	71.4 -2.1
15.5	28.24 -04	34.4 -0.7	23.37 -06	67.0 -0.6	19.71 -08	67.5 -0.4	56.09 -11	73.6 -2.1
25.4	28.26 +01	33.7 -0.7	23.41 +03	66.3 -0.7	19.77 -05	67.9 -0.3	56.08 +00	75.6 -2.0
Dec. 5.4	28.25 -02	32.9 -0.8	23.42 -01	65.5 -0.8	19.80 +01	68.1 -0.2	56.11 -08	77.4 -1.8
15.4	28.22 -06	32.1 -0.6	23.40 -04	64.7 -0.8	19.80 -02	68.2 +0.1	56.09 -08	79.1 -1.6
25.4	28.15 -08	31.3 -0.8	23.34 -07	64.0 -0.8	19.75 -06	68.2 -0.1	56.01 -10	80.6 -1.3
35.3	28.06 -10	30.6 -0.7	23.26 -10	63.2 -0.7	19.67 -09	68.1 -0.2	55.88 -16	81.8 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Persei.		γ Tauri.		ζ Persei.		γ^1 Eridani.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 3 33	^m 47° 21'	^h 3 39	^m 23° 41'	^h 3 45	^m 31° 28'	^h 3 51	^m 13° 53'
Jan. 0.4	29.65 -11	35.0 +1.2	36.14 -06	25.2 +0.1	47.97 -06	67.1 +0.5	50.44 -07	33.5 +1.5
10.3	29.52 -16	36.0 0.8	36.06 -10	25.2 0.0	47.89 -10	67.4 0.3	50.35 -10	34.9 1.3
20.3	29.34 -20	36.7 0.5	35.95 -13	25.1 -0.3	47.77 -14	67.6 +0.1	50.24 -13	36.2 1.1
30.3	29.13 -23	37.1 +0.3	35.80 -16	24.9 0.3	47.61 -17	67.6 -0.1	50.10 -16	37.1 0.8
Feb. 9.3	28.88 -25	37.1 -0.2	35.63 -18	24.6 0.4	47.43 -19	67.5 0.3	49.93 -17	37.8 0.5
19.2	28.62 -26	36.7 0.5	35.45 -19	24.2 0.5	47.23 -20	67.2 0.4	49.75 -18	38.2 +0.3
Mar. 1.2	28.35 -26	36.0 0.8	35.26 -18	23.7 0.5	47.03 -20	66.6 0.6	49.57 -18	38.3 -0.1
11.2	28.10 -24	35.0 1.1	35.08 -17	23.1 0.6	46.83 -19	66.0 0.7	49.39 -18	38.1 0.4
21.2	27.87 -21	33.8 1.4	34.92 -15	22.5 0.6	46.65 -17	65.2 0.8	49.22 -16	37.6 0.6
31.1	27.63 -18	32.3 1.5	34.78 -12	21.9 0.6	46.49 -14	64.3 0.9	49.07 -13	36.8 0.9
April 10.1	27.54 -11	30.7 1.6	34.67 -08	21.2 0.6	46.38 -10	63.4 0.9	48.95 -10	35.8 1.2
20.1	27.46 -08	29.0 1.7	34.61 -04	20.7 0.5	46.30 -05	62.4 0.9	48.87 -06	34.4 1.5
30.0	27.44 +01	27.4 1.6	34.60 +01	20.3 0.4	46.28 -00	61.6 0.6	48.83 -02	32.8 1.7
May 10.0	27.48 -08	25.8 1.5	34.63 -06	20.0 -0.2	46.31 +06	60.9 0.7	48.83 +02	31.0 1.9
20.0	27.59 -14	24.4 1.3	34.72 -11	19.9 0.0	46.39 -11	60.3 0.5	48.88 -07	29.1 2.1
30.0	27.77 -20	23.1 1.1	34.85 -16	20.0 +0.2	46.53 -16	59.9 0.3	48.97 -12	26.9 2.2
June 8.9	28.00 -26	22.1 0.9	35.03 -20	20.2 0.4	46.71 -21	59.7 -0.1	49.11 -16	24.7 2.3
18.9	28.28 -31	21.4 0.6	35.24 -24	20.7 0.6	46.94 -25	59.7 +0.1	49.29 -19	22.4 2.3
28.9	28.61 -35	20.9 -0.3	35.50 -27	21.3 0.7	47.20 -28	59.9 0.3	49.50 -22	20.1 2.2
July 8.9	28.98 -38	20.8 0.0	35.78 -29	22.2 0.9	47.49 -30	60.4 0.5	49.74 -25	17.9 2.1
19.8	29.36 -40	20.9 +0.3	36.08 -30	23.1 1.0	47.81 -32	61.0 0.7	50.01 -27	15.8 2.0
29.9	29.77 -41	21.4 0.5	36.30 -31	24.2 1.1	48.14 -33	61.8 0.9	50.28 -28	13.9 1.8
Aug. 7.8	30.18 -41	22.1 0.8	36.70 -32	25.3 1.1	48.47 -34	62.7 1.0	50.57 -29	12.3 1.5
17.7	30.59 -41	23.1 1.1	37.02 -31	26.4 1.2	48.81 -33	63.7 1.1	50.86 -29	10.9 1.1
27.7	30.99 -40	24.3 1.3	37.33 -30	27.6 1.2	49.14 -33	64.9 1.2	51.15 -28	10.0 0.8
Sept. 6.7	31.38 -38	25.7 1.5	37.63 -29	28.8 1.1	49.46 -32	66.0 1.2	51.43 -27	9.4 -0.4
16.7	31.75 -36	27.3 1.7	37.91 -27	29.9 1.1	49.77 -30	67.2 1.2	51.69 -26	9.2 0.0
26.6	32.09 -33	29.0 1.8	38.18 -25	30.9 1.0	50.06 -28	68.4 1.2	51.94 -24	9.4 +0.4
Oct. 6.6	32.41 -30	30.9 1.9	38.42 -23	31.8 0.9	50.32 -25	69.6 1.2	52.17 -22	10.0 0.8
16.6	32.69 -26	32.7 1.9	38.64 -21	32.6 0.8	50.56 -23	70.7 1.1	52.37 -19	11.0 1.1
26.6	32.93 -22	34.7 2.0	38.83 -18	33.3 0.7	50.78 -20	71.0 1.1	52.55 -17	12.2 1.4
Nov. 5.5	33.14 -18	36.7 2.0	39.00 -16	34.0 0.6	50.96 -16	72.9 1.0	52.70 -14	13.8 1.6
15.5	33.30 -13	38.6 1.9	39.13 -12	34.5 0.5	51.11 -13	73.9 1.0	52.82 -10	15.4 1.7
25.5	33.41 -09	40.5 1.8	39.23 -08	35.0 0.4	51.22 -10	74.8 0.9	52.91 -07	17.3 1.8
Dec. 5.4	33.47 +04	42.3 1.7	39.29 -04	35.3 0.3	51.29 -05	75.7 0.8	52.96 +03	19.1 1.8
15.4	33.48 -02	43.9 1.5	39.31 +01	35.6 0.2	51.32 -01	76.4 0.7	52.97 -01	20.9 1.8
25.4	33.43 -07	45.3 1.3	39.30 -03	35.8 0.2	51.31 +03	77.0 0.6	52.95 -04	22.6 1.6
35.4	33.33 -12	46.6 +1.1	39.24 -07	35.9 +0.1	51.25 +07	77.6 +0.5	52.89 -08	24.2 +1.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Tauri.		δ Tauri.		α TAURI. (Aldebaran.)		ε Auriga.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 4 ^m 12	[°] 15 ['] 18	^h 4 ^m 20	[°] 18 ['] 52	^h 4 ^m 28	[°] 16 ['] 14	^h 4 ^m 48	[°] 32 ['] 56
Jan. 0.4	14.81 -0.01	6.6 -0.3	52.43 -0.02	50.7 -0.1	18.74 -0.02	14.6 -0.3	21.67 -0.00	62.7 +0.7
10.4	14.76 -0.07	6.3 -0.3	52.39 -0.06	50.5 -0.1	18.70 -0.06	14.3 -0.3	21.65 -0.03	63.4 -0.6
20.4	14.67 -0.11	6.0 -0.3	52.30 -0.10	50.4 -0.2	18.62 -0.10	14.0 -0.3	21.57 -0.10	63.9 -0.4
30.3	14.55 -0.14	5.7 -0.3	52.18 -0.13	50.2 -0.2	18.50 -0.13	13.8 -0.3	21.45 -0.14	64.3 -0.3
Feb. 9.3	14.43 -0.16	5.3 -0.3	52.03 -0.16	49.9 -0.2	18.36 -0.16	13.5 -0.3	21.29 -0.16	64.6 +0.2
19.3	14.22 -0.18	5.0 -0.3	51.86 -0.18	49.7 -0.3	18.19 -0.18	13.2 -0.3	21.10 -0.20	64.7 -0.6
Mar. 1.2	14.04 -0.18	4.7 -0.3	51.67 -0.19	49.4 -0.3	18.01 -0.18	12.9 -0.3	20.89 -0.21	64.6 -0.2
11.2	13.86 -0.18	4.3 -0.3	51.49 -0.18	49.0 -0.3	17.82 -0.18	12.6 -0.3	20.68 -0.21	64.3 -0.3
21.2	13.69 -0.16	4.1 -0.3	51.31 -0.17	48.7 -0.3	17.64 -0.17	12.4 -0.3	20.47 -0.20	63.9 -0.3
31.2	13.54 -0.14	3.8 -0.3	51.15 -0.14	48.4 -0.3	17.48 -0.15	12.1 -0.3	20.27 -0.19	63.4 -0.4
April 10.1	13.42 -0.10	3.7 -0.1	51.02 -0.11	48.1 -0.3	17.35 -0.13	11.9 -0.3	20.10 -0.16	62.7 -0.7
20.1	13.33 -0.06	3.6 -0.0	50.92 -0.07	47.8 -0.3	17.25 -0.06	11.8 -0.1	19.97 -0.11	61.9 -0.6
30.1	13.23 -0.02	3.6 +0.1	50.87 -0.03	47.7 -0.1	17.19 -0.04	11.8 +0.1	19.89 -0.06	61.2 -0.6
May 10.1	13.29 +0.02	3.8 -0.3	50.87 +0.03	47.7 -0.0	17.18 +0.01	11.9 -0.2	19.85 -0.01	60.4 -0.7
20.0	13.34 -0.07	4.1 -0.4	50.91 -0.07	47.8 +0.2	17.21 -0.06	12.2 -0.3	19.87 +0.04	59.7 -0.7
30.0	13.43 -0.12	4.6 -0.6	51.00 -0.11	48.0 -0.3	17.29 -0.10	12.6 -0.6	19.94 -0.09	59.1 -0.6
June 9.0	13.57 -0.16	5.2 -0.7	51.13 -0.16	48.4 -0.6	17.42 -0.16	13.1 -0.6	20.06 -0.14	58.6 -0.6
18.9	13.75 -0.20	6.0 -0.8	51.31 -0.19	49.0 -0.6	17.58 -0.18	13.8 -0.7	20.23 -0.19	58.2 -0.3
28.9	13.96 -0.28	6.9 -0.9	51.52 -0.28	49.7 -0.7	17.79 -0.22	14.6 -0.8	20.44 -0.28	58.0 -0.2
July 8.9	14.21 -0.26	7.9 -1.0	51.77 -0.26	50.5 -0.8	18.02 -0.26	15.5 -0.9	20.69 -0.26	57.9 -0.6
18.9	14.48 -0.28	9.0 -1.1	52.03 -0.28	51.3 -0.9	18.28 -0.27	16.4 -1.0	20.97 -0.29	58.0 +0.2
28.8	14.76 -0.29	10.1 -1.1	52.32 -0.29	52.3 -1.0	18.56 -0.28	17.4 -1.0	21.27 -0.31	58.2 -0.3
Aug. 7.8	15.06 -0.30	11.2 -1.1	52.62 -0.30	53.3 -1.0	18.85 -0.29	18.4 -1.0	21.59 -0.33	58.6 -0.4
17.8	15.36 -0.30	12.3 -1.0	52.92 -0.30	54.2 -0.9	19.15 -0.30	19.3 -0.9	21.92 -0.31	59.0 -0.6
27.8	15.66 -0.29	13.3 -0.9	53.22 -0.30	55.1 -0.9	19.45 -0.30	20.2 -0.8	22.26 -0.34	59.6 -0.6
Sept. 6.7	15.95 -0.29	14.2 -0.8	53.52 -0.29	56.0 -0.8	19.74 -0.29	21.0 -0.7	22.60 -0.34	60.2 -0.7
16.7	16.23 -0.28	14.9 -0.7	53.81 -0.28	56.7 -0.7	20.03 -0.28	21.7 -0.6	22.93 -0.33	60.8 -0.7
26.7	16.50 -0.26	15.5 -0.5	54.09 -0.27	57.4 -0.6	20.31 -0.27	22.2 -0.5	23.25 -0.32	61.5 -0.7
Oct. 6.6	16.75 -0.24	15.9 -0.4	54.35 -0.26	57.9 -0.5	20.57 -0.26	22.6 -0.3	23.57 -0.30	62.3 -0.7
16.6	16.98 -0.22	16.2 -0.3	54.60 -0.25	58.3 -0.3	20.82 -0.24	22.9 -0.3	23.86 -0.29	63.0 -0.7
26.6	17.20 -0.20	16.4 +0.1	54.82 -0.21	58.6 -0.3	21.04 -0.21	23.0 +0.1	24.14 -0.28	63.7 -0.6
Nov. 5.6	17.38 -0.17	16.4 -0.0	55.02 -0.19	58.8 -0.1	21.24 -0.19	23.0 -0.0	24.39 -0.24	64.5 -0.6
15.5	17.54 -0.14	16.3 -0.1	55.19 -0.16	58.9 +0.1	21.42 -0.16	22.9 -0.1	24.61 -0.20	65.3 -0.6
25.5	17.67 -0.11	16.2 -0.2	55.33 -0.12	58.9 -0.0	21.56 -0.13	22.8 -0.3	24.80 -0.17	66.1 -0.8
Dec. 5.5	17.76 -0.07	16.0 -0.2	55.43 -0.08	58.9 -0.0	21.67 -0.09	22.6 -0.3	24.95 -0.13	66.9 -0.8
15.5	17.91 +0.01	15.7 -0.3	55.50 +0.04	58.8 -0.1	21.74 -0.05	22.3 -0.2	25.05 -0.08	67.6 -0.8
25.4	17.83 -0.00	15.4 -0.3	55.52 -0.00	58.8 -0.1	21.77 +0.01	22.1 -0.3	25.11 +0.03	68.4 -0.7
35.4	17.80 -0.03	15.1 -0.3	55.51 -0.04	58.7 -0.1	21.76 -0.03	21.9 -0.3	25.11 -0.02	69.1 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Orionis.		α Aurigæ. (Capella.)		β Orionis. (Rigel.)		β Tauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 4 ^m 56	[°] 15 ['] 12	^h 5 ^m 6	[°] 45 ['] 51	^h 5 ^m 8	[°] 8 ['] 21	^h 5 ^m 17	[°] 28 ['] 29
Jan. 0.4	59.60	-00	53.99	+01	10.04	+01	54.65	+03
10.4	59.59	-04	53.98	-09	10.03	-04	54.65	-02
20.4	59.53	-08	53.90	-11	9.97	-08	54.61	-07
30.4	59.43	-12	53.76	-18	9.87	-12	54.52	-11
Feb. 9.3	59.30	-15	53.57	-21	9.73	-15	54.38	-15
19.3	59.14	-17	53.34	-24	9.57	-17	54.21	-18
Mar. 1.3	58.96	-18	53.09	-26	9.39	-18	54.02	-20
11.2	58.77	-19	52.82	-27	9.20	-19	53.82	-21
21.2	58.59	-18	52.56	-26	9.01	-19	53.61	-20
31.2	58.41	-16	52.31	-23	8.83	-17	53.41	-19
April 10.2	58.26	-13	52.09	-20	8.67	-16	53.23	-16
20.1	58.14	-10	51.91	-15	8.54	-12	53.09	-12
30.1	58.06	-06	51.73	-10	8.44	-08	52.99	-08
May 10.1	58.02	-02	51.71	-04	8.38	-04	52.93	-04
20.1	58.03	+08	51.70	+02	8.36	+01	52.91	+01
30.0	58.08	-08	51.75	-08	8.39	-06	52.95	-06
June 9.0	58.18	-12	51.87	-14	8.46	-09	53.04	-11
19.0	58.32	-16	52.04	-20	8.57	-13	53.17	-15
28.9	58.50	-20	52.26	-23	8.72	-17	53.34	-19
July 8.9	58.71	-23	52.53	-26	8.90	-20	53.56	-23
18.9	58.96	-25	52.84	-28	9.12	-23	53.80	-26
28.9	59.21	-27	53.18	-28	9.35	-24	54.07	-28
Aug. 7.8	59.49	-28	53.55	-27	9.61	-26	54.37	-30
17.8	59.77	-29	53.93	-29	9.88	-27	54.67	-31
27.8	60.07	-29	54.33	-30	10.15	-28	54.99	-32
Sept. 6.8	60.36	-29	54.73	-30	10.43	-28	55.31	-32
16.7	60.65	-29	55.13	-30	10.71	-26	55.63	-32
26.7	60.94	-28	55.52	-29	10.98	-27	55.95	-32
Oct. 6.7	61.22	-27	55.90	-27	11.25	-26	56.27	-31
16.6	61.48	-26	56.27	-26	11.50	-24	56.57	-29
26.6	61.72	-23	56.62	-23	11.74	-23	56.85	-28
Nov. 5.6	61.95	-21	56.93	-20	11.96	-21	57.12	-26
15.6	62.15	-19	57.22	-26	12.15	-18	57.36	-23
25.5	62.32	-16	57.46	-22	12.31	-15	57.57	-19
Dec. 5.5	62.46	-12	57.65	-17	12.44	-11	57.75	-16
15.5	62.56	-08	57.80	-11	12.53	-07	57.88	-11
25.5	62.61	+04	57.88	+06	12.59	+08	57.96	-06
35.4	62.63	-01	57.90	-01	12.59	-01	58.00	+01

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ϵ Orionis.		α Columbae.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 5 ^m 25	[°] 0 ['] 23	^h 5 ^m 26	[°] 17 ['] 55	^h 5 ^m 29	[°] 1 ['] 17	^h 5 ^m 34	[°] 34 ['] 8
Jan. 0.4	14.05 +.03	72.8 +1.3	53.26 +.01	24.2 +2.1	29.21 +.03	33.8 +1.3	51.62 -.01	60.8 +2.0
10.4	14.06 -.02	74.1 1.1	53.24 -.04	26.2 1.9	29.22 -.02	35.0 1.3	51.58 -.06	63.5 2.6
20.4	14.02 -.06	75.1 1.0	53.19 -.06	28.1 1.7	29.18 -.06	36.2 1.1	51.50 -.11	65.9 2.3
30.4	13.93 -.10	76.1 0.8	53.08 -.12	29.7 1.4	29.10 -.10	37.1 0.9	51.37 -.15	68.0 1.9
Feb. 9.3	13.81 -.13	76.8 0.6	52.95 -.15	30.9 1.1	28.98 -.13	37.9 0.7	51.19 -.19	69.7 1.5
19.3	13.67 -.16	77.4 0.5	52.78 -.18	31.9 0.8	28.83 -.16	38.5 0.5	50.98 -.22	71.0 1.0
Mar. 1.3	13.49 -.18	77.7 0.3	52.59 -.20	32.5 0.4	28.66 -.18	38.9 0.3	50.75 -.24	71.8 0.6
11.3	13.31 -.19	77.9 +0.1	52.38 -.20	32.7 +0.1	28.47 -.19	39.1 +0.1	50.51 -.26	72.2 +0.1
21.2	13.12 -.18	77.9 -0.1	52.18 -.20	32.7 -0.2	28.29 -.18	39.1 -0.1	50.26 -.28	72.1 -0.3
31.2	12.94 -.17	77.8 0.3	51.98 -.19	32.3 0.6	28.10 -.17	39.0 0.3	50.01 -.34	71.6 0.7
April 10.2	12.78 -.15	77.4 0.4	51.80 -.17	31.5 0.9	27.94 -.15	38.6 0.5	49.79 -.21	70.6 1.2
20.1	12.64 -.12	76.9 0.6	51.65 -.14	30.5 1.2	27.80 -.13	38.0 0.6	49.59 -.18	69.3 1.6
30.1	12.54 -.08	76.2 0.8	51.52 -.10	29.1 1.3	27.70 -.09	37.3 0.8	49.42 -.14	67.5 1.9
May 10.1	12.48 -.04	75.3 1.0	51.44 -.06	27.5 1.7	27.63 -.06	36.4 1.0	49.30 -.10	65.5 2.2
20.1	12.45 -.00	74.2 1.1	51.40 -.02	25.7 1.9	27.60 -.01	35.3 1.2	49.22 -.06	63.1 2.3
30.0	12.47 +.04	73.0 1.3	51.40 +.02	23.7 2.1	27.61 +.03	34.0 1.3	49.18 -.01	60.5 2.7
June 9.0	12.53 -.06	71.7 1.4	51.44 -.07	21.5 2.2	27.67 -.06	32.7 1.4	49.20 +.04	57.7 2.6
19.0	12.63 -.12	70.3 1.5	51.53 -.11	19.2 2.3	27.77 -.12	31.2 1.6	49.26 -.09	54.8 2.9
29.0	12.77 -.16	68.9 1.6	51.66 -.14	16.8 2.3	27.90 -.15	29.7 1.6	49.37 -.13	51.9 2.9
July 8.9	12.94 -.19	67.3 1.6	51.82 -.16	14.5 2.3	28.07 -.19	28.1 1.6	49.52 -.17	49.0 2.6
18.9	13.15 -.22	65.8 1.6	52.01 -.21	12.2 2.2	28.27 -.21	26.6 1.6	49.72 -.21	46.2 2.7
28.9	13.38 -.24	64.3 1.4	52.24 -.22	10.1 2.0	28.49 -.23	25.1 1.4	49.94 -.24	43.6 2.4
Aug. 7.8	13.62 -.26	63.0 1.2	52.48 -.25	8.3 1.7	28.74 -.26	23.8 1.3	50.20 -.27	41.3 2.1
17.8	13.88 -.27	61.9 1.0	52.74 -.27	6.7 1.4	29.00 -.26	22.6 1.1	50.47 -.29	39.4 1.7
27.8	14.16 -.28	60.9 0.8	53.02 -.28	5.4 1.0	29.26 -.27	21.7 0.8	50.77 -.30	37.9 1.3
Sept. 6.8	14.43 -.28	60.3 0.6	53.30 -.28	4.6 0.6	29.54 -.28	21.0 0.6	51.07 -.31	36.9 0.7
16.7	14.71 -.28	59.9 -0.2	53.59 -.28	4.2 -0.2	29.82 -.28	20.6 -0.2	51.39 -.31	36.4 -0.2
26.7	14.99 -.27	59.8 +0.1	53.87 -.28	4.2 +0.3	30.10 -.27	20.5 +0.1	51.70 -.31	36.5 +0.4
Oct. 6.7	15.26 -.27	60.0 0.4	54.15 -.27	4.7 0.7	30.37 -.27	20.7 0.4	52.01 -.30	37.2 0.9
16.7	15.53 -.26	60.5 0.6	54.41 -.26	5.6 1.1	30.64 -.26	21.3 0.7	52.31 -.29	38.4 1.3
26.6	15.78 -.24	61.2 0.9	54.67 -.24	7.0 1.3	30.89 -.24	22.0 0.9	52.58 -.27	40.1 1.9
Nov. 5.6	16.01 -.22	62.2 1.1	54.90 -.22	8.6 1.3	31.12 -.22	23.1 1.1	52.83 -.24	42.2 2.3
15.6	16.22 -.20	63.4 1.2	55.10 -.19	10.6 2.1	31.34 -.20	24.3 1.3	53.06 -.21	44.8 2.6
25.5	16.40 -.17	64.7 1.2	55.28 -.16	12.7 2.2	31.52 -.17	25.7 1.4	53.25 -.17	47.5 2.9
Dec. 5.5	16.55 -.13	66.0 1.4	55.42 -.12	15.0 2.3	31.68 -.14	27.1 1.4	53.39 -.12	50.5 2.9
15.5	16.67 -.09	67.4 1.4	55.52 -.08	17.3 2.3	31.80 -.10	28.5 1.4	53.49 -.07	53.5 2.9
25.5	16.74 -.06	68.8 1.3	55.58 +.04	19.6 2.2	31.87 -.06	29.9 1.4	53.54 +.02	56.4 2.9
35.4	16.77 +.01	70.0 +1.2	55.60 -.00	21.7 +2.1	31.91 +.01	31.3 +1.3	53.54 -.03	59.2 +2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		μ Geminorum.		α Argus. (Canopus.)		γ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 5 ^m 47	[°] 7 ['] 22	^h 6 ^m 14	[°] 22 ['] 34	^h 6 ^m 20	[°] 52 ['] 37	^h 6 ^m 30	[°] 16 ['] 30
Jan. 0.5	59.63 +.06	35.0 -0.9	56.29 +.09	32.5 0.0	62.39 -00	38.4 +.2	3.08 +.10	24.7 -0.4
10.5	59.68 +.01	34.2 0.8	56.35 +.04	32.5 +0.1	62.36 -07	41.8 2.3	3.15 +.05	24.3 0.3
20.4	59.66 -.04	33.5 0.7	56.36 -.01	32.6 0.1	62.26' -14	45.0 2.0	3.18 -00	24.1 0.2
30.4	59.60 -.08	32.8 0.3	56.32 -.06	32.8 0.2	62.00 -20	47.8 2.6	3.15 -.05	23.9 0.1
Feb. 9.4	59.50 -.12	32.4 0.4	56.24 -.11	33.0 0.2	61.86 -.25	50.3 2.2	3.08 -.09	23.8 -0.1
19.3	59.36 -.15	32.0 0.3	56.11 -.15	33.2 0.2	61.58 -.30	52.3 1.8	2.97 -.13	23.8 0.0
Mar. 1.3	59.20 -.17	31.7 0.2	55.95 -.17	33.3 0.2	61.26 -.33	53.8 1.3	2.82 -.15	23.8 +0.1
11.3	59.02 -.18	31.6 -0.1	55.76 -.19	33.5 0.1	60.92 -.35	54.8 0.8	2.65 -.18	23.9 0.1
21.3	58.83 -.18	31.6 0.0	55.57 -.20	33.6 +0.1	60.55 -.36	55.3 +0.2	2.46 -.19	24.0 0.1
31.2	58.65 -.17	31.6 +0.1	55.37 -.19	33.6 0.0	60.19 -.38	55.3 -0.3	2.27 -.18	24.1 0.1
April 10.2	58.48 -.16	31.8 0.2	55.18 -.18	33.6 0.0	59.83 -.34	54.7 0.6	2.09 -.17	24.2 0.1
20.2	58.33 -.15	32.1 0.2	55.02 -.16	33.6 -0.1	59.50 -.31	53.7 1.2	1.92 -.15	24.3 0.1
30.2	58.22 -.10	32.5 0.4	54.88 -.12	33.5 0.1	59.20 -.28	52.2 1.6	1.78 -.12	24.5 0.2
May 10.1	58.14 -.06	33.0 0.6	54.78 -.08	33.4 0.1	58.95 -.23	50.2 2.2	1.63 -.09	24.6 0.2
20.1	58.10 -.02	33.6 0.7	54.72 -.04	33.3 0.1	58.74 -.18	47.9 2.5	1.61 -.05	24.8 0.2
30.1	58.10 +.02	34.3 0.8	54.71 +.01	33.2 -0.1	58.59 -.12	45.2 2.8	1.58 -.01	25.0 0.2
June 9.0	58.15 -.07	35.2 0.9	54.74 -.05	33.1 0.0	58.49 -.06	42.2 3.0	1.59 +.03	25.3 0.3
19.0	58.23 -.11	36.1 1.0	54.81 -.09	33.1 0.0	58.46 -.00	39.1 3.2	1.65 -.07	25.6 0.2
29.0	58.36 -.14	37.1 1.0	54.92 -.12	33.2 +0.1	58.49 +.05	35.8 3.3	1.74 -.11	26.0 0.4
July 9.0	58.52 -.17	38.2 1.0	55.07 -.17	33.3 0.1	58.58 -.12	32.5 3.3	1.87 -.15	26.4 0.4
18.9	58.71 -.20	39.2 1.0	55.26 -.20	33.4 0.1	58.72 -.17	29.3 3.2	2.03 -.18	26.8 0.4
28.9	58.93 -.23	40.3 1.0	55.47 -.23	33.5 0.2	58.93 -.23	26.2 3.0	2.22 -.21	27.2 0.4
Aug. 7.9	59.17 -.25	41.2 0.9	55.71 -.25	33.7 0.2	59.18 -.27	23.4 2.6	2.45 -.23	27.6 0.3
17.9	59.42 -.28	42.1 0.9	55.97 -.27	33.8 0.1	59.47 -.31	21.0 2.2	2.69 -.25	27.9 0.3
27.8	59.69 -.37	42.8 0.6	56.25 -.29	33.9 +0.1	59.81 -.35	18.9 1.8	2.95 -.27	28.1 0.2
Sept. 6.8	59.97 -.28	43.3 0.4	56.54 -.30	34.0 0.0	60.17 -.38	17.4 1.2	3.22 -.28	28.2 +0.1
16.8	60.25 -.28	43.6 +0.2	56.84 -.30	34.0 -0.1	60.56 -.39	16.5 -0.0	3.50 -.29	28.2 -0.1
26.7	60.54 -.28	43.7 0.0	57.15 -.31	33.9 0.1	60.96 -.40	16.2 0.0	3.80 -.30	28.1 0.2
Oct. 6.7	60.82 -.28	43.6 -0.2	57.46 -.31	33.7 0.2	61.36 -.40	16.5 +0.6	4.10 -.30	27.8 0.3
16.7	61.10 -.27	43.2 0.5	57.77 -.30	33.5 0.2	61.76 -.39	17.5 1.3	4.40 -.30	27.4 0.5
26.7	61.36 -.28	42.6 0.6	58.07 -.30	33.2 0.3	62.14 -.37	19.0 1.9	4.69 -.29	26.9 0.6
Nov. 5.6	61.62 -.24	41.9 0.8	58.36 -.28	32.9 0.3	62.50 -.34	21.2 2.4	4.98 -.28	26.3 0.6
15.6	61.85 -.22	41.0 0.9	58.64 -.26	32.7 0.3	62.82 -.30	23.8 2.8	5.26 -.26	25.7 0.7
25.6	62.06 -.19	40.1 1.0	58.89 -.24	32.4 0.3	63.09 -.25	26.8 3.2	5.51 -.24	25.0 0.7
Dec. 5.6	62.24 -.16	39.1 1.0	59.11 -.20	32.1 0.2	63.31 -.19	30.2 3.4	5.74 -.21	24.4 0.6
15.5	62.38 -.12	38.1 1.0	59.30 -.16	32.0 0.1	63.46 -.12	33.6 3.5	5.93 -.17	23.8 0.6
25.5	62.48 -.08	37.2 0.9	59.44 -.12	31.9 -0.1	63.55 +.05	37.2 3.5	6.08 -.13	23.3 0.5
35.5	62.54 +.04	36.3 -0.6	59.54 +.07	31.9 0.0	63.56 -0.0	40.6 +3.4	6.19 +.08	22.9 -0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Majoris. (Sirius.)		ϵ Canis Majoris.		δ Canis Majoris.		δ Geminorum.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 6 ^m 39	[°] 16 ['] 32	^h 6 ^m 53	[°] 28 ['] 47	^h 7 ^m 2	[°] 26 ['] 10	^h 7 ^m 12	[°] 22 ['] 13
Jan. 0.5	18.63 +.08	19.5 +2.4	25.63 +.08	46.5 +2.9	60.65 +.10	71.7 +2.8	12.06 +.14	15.5 -0.2
10.5	18.63 +.08	21.8 2.2	25.63 +.08	49.4 2.8	60.73 +.08	74.5 2.7	12.18 .10	15.3 -0.1
20.5	18.69 -.02	24.0 2.0	25.69 -.02	52.1 2.6	60.75 -.01	77.1 2.6	12.25 +.04	15.4 +0.1
30.4	18.64 -.07	25.9 1.8	25.65 -.07	54.6 2.3	60.72 -.06	79.5 2.3	12.26 -.01	15.5 0.2
Feb. 9.4	18.56 -.11	27.5 1.6	25.55 -.12	56.7 2.0	60.64 -.10	81.6 2.0	12.23 -.06	15.8 0.3
19.4	18.43 -.14	29.9 1.2	25.41 -.16	58.5 1.6	60.51 -.14	83.4 1.6	12.14 -.10	16.1 0.3
Mar. 7.3	18.27 -.17	30.9 0.9	25.24 -.19	60.0 1.2	60.35 -.18	84.8 1.2	12.02 -.14	16.4 0.4
11.3	18.09 -.19	30.6 0.6	25.03 -.21	61.0 0.8	60.15 -.20	85.9 0.9	11.86 -.17	16.8 0.4
21.3	17.89 -.20	31.0 +0.2	24.81 -.22	61.6 +0.4	59.95 -.21	86.5 0.8	11.68 -.19	17.1 0.3
31.3	17.69 -.20	31.1 -0.1	24.59 -.23	61.8 0.0	59.73 -.22	86.8 +0.1	11.49 -.19	17.4 0.3
April 10.2	17.49 -.19	30.8 0.4	24.36 -.22	61.6 -0.4	59.51 -.21	86.7 -0.3	11.29 -.18	17.7 0.2
20.2	17.31 -.17	30.2 0.7	24.15 -.20	61.0 0.8	59.30 -.19	86.1 0.7	11.12 -.17	17.8 0.2
30.2	17.15 -.14	29.3 1.0	23.96 -.18	60.0 1.2	59.12 -.17	85.3 1.1	10.96 -.15	18.0 0.1
May 10.2	17.02 -.11	28.2 1.3	23.80 -.14	58.7 1.3	58.96 -.14	84.0 1.4	10.82 -.12	18.1 +0.1
20.1	16.92 -.08	26.8 1.6	23.67 -.11	57.0 1.8	58.83 -.11	82.5 1.7	10.72 -.08	18.1 0.0
30.1	16.86 -.04	25.1 1.7	23.58 -.07	55.1 2.1	58.74 -.07	80.7 2.0	10.66 -.04	18.1 0.0
June 9.1	16.84 -.00	23.3 1.9	23.53 -.08	52.9 2.3	58.60 -.08	78.6 2.2	10.64 -.00	18.0 0.0
19.0	16.86 +.04	21.4 2.0	23.52 +.01	50.4 2.6	58.67 +.01	76.3 2.3	10.66 +.04	18.0 0.0
29.0	16.92 -.08	19.3 2.1	23.55 -.06	47.9 2.6	58.70 -.03	73.9 2.4	10.71 -.06	18.0 -0.1
July 9.0	17.02 -.11	17.2 2.1	23.62 -.09	45.3 2.6	58.76 -.08	71.4 2.6	10.81 -.11	17.9 0.1
19.0	17.15 -.15	15.1 2.0	23.73 -.13	42.7 2.6	58.87 -.12	68.9 2.4	10.94 -.15	17.8 0.1
28.9	17.31 -.18	13.1 1.9	23.88 -.16	40.2 2.4	59.01 -.10	66.5 2.3	11.10 -.18	17.7 0.1
Aug. 7.9	17.50 -.20	11.3 1.7	24.06 -.19	37.9 2.2	59.18 -.19	64.3 2.1	11.20 -.20	17.6 0.1
17.9	17.71 -.22	9.7 1.5	24.27 -.22	35.8 1.9	59.38 -.22	62.3 1.9	11.50 -.22	17.4 0.2
27.9	17.95 -.24	8.4 1.1	24.51 -.25	34.0 1.6	59.60 -.24	60.6 1.6	11.74 -.25	17.2 0.3
Sept. 6.8	18.20 -.26	7.4 0.8	24.77 -.27	32.7 1.1	59.85 -.26	59.2 1.1	12.01 -.27	16.9 0.3
16.8	18.47 -.27	6.8 -0.4	25.05 -.29	31.8 0.6	60.12 -.28	58.3 0.6	12.28 -.29	16.5 0.4
26.8	18.75 -.28	6.7 +0.1	25.34 -.30	31.4 -0.1	60.41 -.29	57.9 -0.1	12.58 -.30	16.0 0.3
Oct. 6.7	19.03 -.29	7.0 0.5	25.64 -.31	31.5 +0.4	60.71 -.30	58.0 +0.4	12.88 -.31	15.4 0.6
16.7	19.32 -.29	7.7 0.0	25.95 -.31	32.2 0.9	61.01 -.30	58.7 0.9	13.20 -.31	14.8 0.7
26.7	19.60 -.28	8.8 1.3	26.26 -.30	33.4 1.4	61.31 -.30	59.8 1.4	13.51 -.32	14.1 0.7
Nov. 5.7	19.88 -.27	10.4 1.7	26.55 -.29	35.1 1.9	61.61 -.29	61.4 1.8	13.83 -.31	13.4 0.7
15.6	20.14 -.26	12.3 2.0	26.83 -.27	37.2 2.3	61.89 -.27	63.4 2.2	14.14 -.30	12.7 0.7
25.6	20.38 -.22	14.4 2.2	27.09 -.24	39.6 2.6	62.15 -.25	65.8 2.5	14.43 -.28	12.1 0.6
Dec. 5.6	20.59 -.19	16.7 2.4	27.31 -.21	42.3 2.8	62.38 -.23	68.4 2.7	14.70 -.25	11.5 0.5
15.6	20.76 -.15	19.2 2.4	27.50 -.17	45.2 2.9	62.58 -.18	71.2 2.8	14.94 -.22	11.1 0.4
25.5	20.89 -.11	21.6 2.4	27.64 -.12	48.1 2.9	62.73 -.13	74.0 2.8	15.14 -.18	10.7 0.3
35.5	20.98 +.07	23.9 +2.3	27.74 +.07	51.1 +2.8	62.84 +.08	76.8 +2.3	15.29 +.13	10.5 -0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Geminorum. (Castor.)		γ Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		φ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 7 ^m 26	[°] 32 ['] 10	^h 7 ^m 32	[°] 5 ['] 33	^h 7 ^m 37	[°] 28 ['] 20	^h 7 ^m 45	[°] 27 ['] 6
Jan. 0.5	7.73 +.17	24.9 +0.4	21.67 +.16	37.4 -1.3	11.79 +.18	28.2 +0.1	22.59 +.19	12.4 0.0
10.5	7.87 .12	25.4 0.6	21.80 .10	36.1 1.2	11.94 .13	28.4 0.3	22.75 .14	12.5 +0.2
20.5	7.96 +.06	26.0 0.7	21.88 +.08	35.1 1.0	12.04 .07	28.7 0.4	22.86 .08	12.8 0.3
30.5	8.00 .00	26.7 0.8	21.91 .00	34.1 0.8	12.08 +.01	29.2 0.5	22.91 +.02	13.2 0.5
Feb. 9.4	7.97 -.03	27.5 0.8	21.88 -.06	33.4 0.8	12.06 -.04	29.8 0.6	22.91 -.03	13.7 0.6
19.4	7.89 .10	28.4 0.8	21.81 .09	32.9 0.4	12.00 .09	30.5 0.7	22.85 .08	14.3 0.6
Mar. 1.4	7.77 .14	29.2 0.8	21.71 .12	32.5 0.3	11.88 .13	31.2 0.7	22.74 .12	15.0 0.7
11.3	7.60 .18	29.9 0.7	21.57 .15	32.3 -0.1	11.73 .16	31.8 0.6	22.60 .16	15.6 0.6
21.3	7.41 .20	30.6 0.6	21.40 .17	32.3 0.0	11.55 .19	32.4 0.6	22.43 .18	16.2 0.6
31.3	7.21 .21	31.1 0.4	21.23 .18	32.3 +0.1	11.36 .20	32.9 0.5	22.24 .19	16.8 0.5
April 10.3	7.00 .20	31.4 0.3	21.05 .17	32.5 0.2	11.16 .20	33.3 0.3	22.05 .19	17.2 0.4
20.2	6.80 .19	31.6 +0.1	20.88 .16	32.8 0.3	10.96 .19	33.6 0.3	21.86 .18	17.5 0.3
30.2	6.62 .17	31.6 -0.1	20.72 .15	33.2 0.4	10.79 .17	33.7 +0.1	21.68 .16	17.7 +0.1
May 10.2	6.46 .14	31.5 0.3	20.59 .12	33.7 0.5	10.63 .14	33.8 0.0	21.53 .14	17.8 0.0
20.2	6.34 .10	31.2 0.3	20.48 .09	34.2 0.6	10.51 .10	33.7 -0.3	21.41 .11	17.8 -0.1
30.1	6.26 .08	30.8 0.4	20.40 .06	34.0 0.7	10.43 .07	33.4 0.3	21.32 .07	17.7 0.2
June 9.1	6.21 -.02	30.3 0.5	20.36 -.02	35.6 0.7	10.38 -.08	33.2 0.3	21.27 -.03	17.4 0.3
19.1	6.22 +.02	29.7 0.6	20.36 +.01	36.4 0.8	10.37 +.01	32.8 0.4	21.26 +.01	17.1 0.3
29.0	6.26 .05	29.0 0.6	20.39 .06	37.2 0.8	10.40 .06	32.4 0.4	21.28 .04	16.8 0.4
July 9.0	6.34 .10	28.4 0.7	20.45 .08	38.0 0.8	10.48 .09	31.9 0.6	21.34 .08	16.4 0.4
19.0	6.47 .11	27.7 0.7	20.55 .11	38.9 0.8	10.58 .13	31.4 0.6	21.44 .12	15.9 0.5
29.0	6.62 .18	27.0 0.7	20.67 .14	39.6 0.7	10.73 .16	30.9 0.6	21.58 .15	15.4 0.5
Aug. 7.9	6.82 .21	26.2 0.7	20.83 .17	40.3 0.6	10.90 .19	30.3 0.6	21.74 .18	14.9 0.6
17.9	7.04 .21	25.5 0.8	21.01 .19	40.9 0.5	11.10 .22	29.7 0.6	21.94 .21	14.3 0.6
27.9	7.29 .26	24.7 0.8	21.21 .21	41.3 0.3	11.33 .24	29.0 0.7	22.16 .24	13.6 0.7
Sept. 6.9	7.56 .28	23.9 0.8	21.43 .23	41.5 +0.1	11.59 .27	28.3 0.7	22.41 .26	12.9 0.7
16.8	7.86 .30	23.2 0.8	21.68 .25	41.5 -0.1	11.87 .29	27.6 0.6	22.68 .28	12.2 0.8
26.8	8.17 .32	22.4 0.8	21.94 .27	41.3 0.4	12.16 .30	26.8 0.8	22.97 .30	11.3 0.8
Oct. 6.8	8.50 .33	21.6 0.8	22.22 .28	40.8 0.6	12.47 .32	25.9 0.8	23.27 .31	10.5 0.9
16.7	8.84 .31	20.9 0.7	22.50 .29	40.0 0.8	12.80 .33	25.1 0.8	23.59 .33	9.6 0.9
26.7	9.18 .35	20.2 0.6	22.80 .30	39.1 1.1	13.13 .34	24.3 0.8	23.93 .33	8.7 0.9
Nov. 5.7	9.53 .31	19.6 0.5	23.09 .29	37.9 1.2	13.47 .33	23.5 0.7	24.26 .33	7.8 0.8
15.7	9.87 .28	19.1 0.4	23.38 .28	36.6 1.4	13.80 .33	22.8 0.6	24.59 .33	7.0 0.7
25.6	10.20 .22	18.8 0.3	23.66 .27	35.2 1.4	14.12 .31	22.2 0.5	24.92 .31	6.3 0.6
Dec. 5.6	10.50 .29	18.6 -0.1	23.92 .25	33.7 1.5	14.42 .29	21.8 0.4	25.22 .29	5.8 0.6
15.6	10.78 .25	18.6 +0.1	24.15 .22	32.3 1.4	14.69 .26	21.5 -0.3	25.50 .26	5.4 0.5
25.6	11.01 .21	18.8 0.3	24.35 .18	30.8 1.4	14.92 .21	21.4 0.0	25.74 .22	5.2 -0.1
35.5	11.19 +.16	19.1 +0.4	24.51 +.13	29.5 -1.2	15.11 +.17	21.5 +0.2	25.93 +.17	5.1 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argus (ι).			ϵ Hydre.			ϵ Ursæ Majoris.			α Cancr.		
	Right Ascension.	Declination South.		Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination North.	
	^h 8	^m 1	^s 23 55	^h 8	^m 39	^s 6 53	^h 8	^m 50	^s 48 33	^h 9	^m 0	^s 11 11
Jan. 0.6	54.40	+16	28.7	45.02	+21	67.2	6.50	+22	24.7	33.48	+24	54.6
10.6	54.54	.11	31.5	45.21	.17	65.9	6.78	.23	25.6	33.70	.19	53.5
20.5	54.62	.06	34.2	45.36	.12	64.7	7.00	.18	26.9	33.87	.14	52.5
30.5	54.66	+01	36.8	45.45	.07	63.7	7.15	.11	28.5	33.99	.09	51.8
Feb. 9.5	54.64	-.04	39.1	45.50	+02	63.0	7.23	+04	30.2	34.05	+04	51.2
19.4	54.57	.09	41.1	45.49	-.03	62.5	7.23	-.03	32.1	34.07	-.01	51.0
Mar. 1.4	54.46	.13	42.8	45.44	.07	62.2	7.16	.10	33.9	34.04	.08	50.9
11.4	54.31	.16	44.2	45.35	.11	62.0	7.03	.16	35.7	33.96	.09	51.0
21.4	54.14	.18	45.2	45.23	.13	62.0	6.85	.20	37.4	33.86	.13	51.2
31.3	53.94	.20	45.9	45.08	.18	62.2	6.63	.23	38.8	33.72	.14	51.5
April 10.3	53.74	.20	46.1	44.92	.16	62.5	6.38	.26	40.0	33.57	.15	51.9
20.3	53.55	.19	46.1	44.76	.16	62.9	6.13	.26	40.8	33.42	.16	52.4
30.3	53.36	.18	45.6	44.60	.15	63.3	5.87	.25	41.4	33.26	.15	52.9
May 10.2	53.19	.16	44.9	44.46	.14	63.8	5.63	.23	41.6	33.11	.14	53.4
20.2	53.03	.14	43.8	44.33	.12	64.4	5.41	.20	41.4	32.98	.12	54.0
30.2	52.91	.11	42.4	44.22	.09	65.0	5.22	.17	40.9	32.87	.10	54.5
June 9.1	52.82	.07	40.7	44.14	.07	65.6	5.07	.13	40.1	32.77	.08	55.0
19.1	52.77	.04	38.8	44.09	.04	66.2	4.96	.09	39.1	32.71	.05	55.5
29.1	52.74	-.01	36.8	44.07	-.01	66.9	4.89	-.04	37.7	32.67	-.02	55.9
July 9.1	52.75	+03	34.6	44.07	+02	67.5	4.87	+01	36.2	32.66	+01	56.3
19.0	52.80	.06	32.4	44.11	.03	68.1	4.90	.03	34.5	32.68	.03	56.6
29.0	52.83	.10	30.2	44.17	.08	68.7	4.98	.10	32.7	32.73	.06	56.9
Aug. 8.0	52.99	.13	28.0	44.26	.11	69.1	5.09	.14	30.7	32.81	.09	57.0
18.0	53.14	.18	26.0	44.39	.14	69.5	5.26	.18	28.7	32.91	.11	57.1
27.9	53.31	.19	24.3	44.53	.16	69.7	5.46	.22	26.6	33.04	.13	57.0
Sept. 6.9	53.52	.22	22.9	44.71	.19	69.7	5.70	.26	24.5	33.20	.17	56.7
16.9	53.75	.24	21.8	44.91	.21	69.5	5.99	.29	22.5	33.39	.20	56.2
26.8	54.01	.27	21.2	45.14	.24	69.0	6.31	.31	20.5	33.61	.22	55.6
Oct. 6.8	54.23	.29	21.0	45.39	.26	68.4	6.66	.37	18.7	33.85	.25	54.7
16.8	54.58	.30	21.4	45.66	.28	67.5	7.05	.40	16.9	34.11	.28	53.6
26.8	54.88	.31	22.2	45.95	.30	66.3	7.46	.43	15.4	34.40	.30	52.4
Nov. 5.7	55.19	.31	23.5	46.25	.31	65.0	7.89	.44	14.1	34.71	.31	51.0
15.7	55.50	.30	25.3	46.56	.31	63.6	8.33	.44	13.1	35.02	.32	49.4
25.7	55.89	.29	27.4	46.87	.30	62.0	8.77	.44	12.4	35.34	.31	47.9
Dec. 5.7	56.08	.26	29.8	47.17	.29	60.4	9.21	.42	12.0	35.65	.30	46.3
15.6	56.32	.22	32.5	47.45	.27	58.7	9.61	.39	12.0	35.95	.28	44.8
25.6	56.54	.19	35.3	47.70	.24	57.2	9.99	.35	12.4	36.22	.26	43.3
35.6	56.71	+14	38.1	47.92	+20	55.8	10.31	+20	13.1	36.46	+22	42.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Argus.		α Hydra.		δ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 13	^m 58° 42'	^h 9 21	^m 8° 5'	^h 9 23	^m 52° 16'	^h 9 38	^m 24° 22'
Jan. 0.6	34.58 +.21	53.5 +2.4	4.20 +.24	6.3 +2.2	57.67 +.37	35.3 +0.6	18.66 +.26	53.3 -0.8
10.6	34.85 -.23	62.1 3.6	4.42 -.20	8.5 2.1	58.01 -.31	36.2 1.1	18.92 -.24	52.6 0.5
20.6	35.04 -.16	65.8 3.7	4.60 -.16	10.6 2.0	58.29 -.24	37.5 1.4	19.14 -.19	52.3 -0.2
30.5	35.14 +.06	69.6 3.7	4.72 -.10	12.5 1.8	58.49 -.17	39.1 1.7	19.31 -.14	52.3 +0.1
Feb. 9.5	35.16 -.02	73.3 3.6	4.80 -.05	14.2 1.6	58.62 -.09	41.0 1.9	19.42 -.09	52.5 0.3
19.5	35.10 -.10	76.8 3.4	4.83 +.01	15.7 1.4	58.67 +.01	43.0 2.1	19.48 +.03	53.0 0.6
Mar. 1.4	34.97 -.17	80.2 3.2	4.81 -.04	17.0 1.1	58.64 -.06	45.1 2.1	19.49 -.02	53.7 0.8
11.4	34.77 -.22	83.2 3.8	4.75 -.08	17.9 0.8	58.54 -.13	47.2 2.0	19.45 -.06	54.5 0.9
21.4	34.51 -.26	85.8 3.4	4.66 -.11	18.6 0.6	58.38 -.18	49.2 1.9	19.37 -.10	55.4 0.9
31.4	34.21 -.29	88.0 3.0	4.53 -.13	19.1 0.3	58.18 -.23	50.9 1.7	19.25 -.13	56.3 1.0
April 10.3	33.87 -.35	89.8 1.6	4.39 -.14	19.3 +0.1	57.93 -.26	52.5 1.4	19.11 -.15	57.3 0.9
20.3	33.51 -.37	91.1 1.0	4.24 -.15	19.3 -0.1	57.67 -.27	53.7 1.1	18.95 -.16	58.2 0.8
30.3	33.14 -.37	91.8 +0.3	4.09 -.15	19.1 0.3	57.39 -.27	54.6 0.7	18.80 -.16	59.0 0.7
May 10.3	32.77 -.36	92.1 0.0	3.94 -.14	18.7 0.5	57.12 -.26	55.1 +0.3	18.64 -.15	59.7 0.6
20.2	32.41 -.35	91.8 -0.5	3.80 -.13	18.1 0.7	56.86 -.24	55.2 -0.1	18.49 -.14	60.2 0.5
30.2	32.07 -.33	91.1 1.0	3.68 -.11	17.3 0.8	56.63 -.21	54.9 0.5	18.35 -.13	60.6 0.3
June 9.2	31.76 -.30	89.8 1.5	3.58 -.09	16.4 1.0	56.43 -.18	54.2 0.8	18.23 -.11	60.8 +0.2
19.1	31.48 -.26	88.1 1.9	3.49 -.07	15.3 1.1	56.27 -.14	53.2 1.1	18.14 -.08	60.9 0.0
29.1	31.25 -.21	86.0 2.3	3.43 -.05	14.1 1.2	56.15 -.10	51.9 1.4	18.07 -.06	60.8 -0.1
July 9.1	31.06 -.16	83.5 2.6	3.40 -.02	12.9 1.3	56.08 -.05	50.3 1.7	18.03 -.03	60.6 0.3
19.1	30.92 -.10	80.8 2.8	3.39 -.00	11.6 1.3	56.05 -.01	48.5 1.9	18.02 -.00	60.2 0.5
29.0	30.85 -.04	77.8 3.0	3.41 +.03	10.4 1.2	56.07 +.04	46.4 2.1	18.03 +.03	59.7 0.6
Aug. 8.0	30.84 +.02	74.8 3.1	3.45 -.06	9.2 1.2	56.14 -.09	44.2 2.3	18.08 -.06	59.0 0.7
18.0	30.89 -.09	71.7 3.0	3.53 -.09	8.0 1.0	56.25 -.14	41.9 2.4	18.15 -.09	58.2 0.9
28.0	31.01 -.15	63.7 2.9	3.63 -.12	7.1 0.8	56.41 -.18	39.5 2.4	18.25 -.12	57.2 1.0
Sept. 6.9	31.19 -.22	65.9 2.6	3.76 -.15	6.3 0.6	56.62 -.23	37.1 2.4	18.39 -.15	56.1 1.2
16.9	31.45 -.28	63.5 2.3	3.93 -.16	5.9 -0.3	56.87 -.26	34.6 2.4	18.56 -.16	54.9 1.3
26.9	31.76 -.31	61.4 1.8	4.12 -.21	5.7 0.0	57.17 -.32	32.2 2.3	18.76 -.22	53.5 1.5
Oct. 6.3	32.13 -.40	59.9 1.3	4.34 -.24	5.9 +0.3	57.52 -.36	29.9 2.2	18.99 -.26	51.9 1.6
16.8	32.55 -.44	58.9 0.7	4.59 -.26	6.3 0.7	57.90 -.40	27.8 2.0	19.25 -.27	50.3 1.7
26.8	33.01 -.47	58.5 -0.1	4.86 -.28	7.2 1.0	58.31 -.43	25.8 1.8	19.53 -.30	48.6 1.7
Nov. 5.8	33.49 -.49	58.8 +0.6	5.16 -.30	8.4 1.4	58.75 -.45	24.1 1.5	19.85 -.32	46.9 1.7
15.7	33.98 -.49	59.8 1.2	5.46 -.31	10.0 1.7	59.22 -.47	22.7 1.2	20.18 -.34	45.2 1.7
25.7	34.47 -.48	61.3 1.3	5.78 -.31	11.7 1.9	59.69 -.47	21.7 0.8	20.52 -.34	43.6 1.6
Dec. 5.7	34.93 -.45	63.4 2.4	6.08 -.30	13.8 2.1	60.17 -.46	21.0 -0.4	20.87 -.34	42.1 1.4
15.7	35.36 -.40	66.1 2.9	6.38 -.28	15.9 2.2	60.62 -.44	20.8 0.0	21.20 -.33	40.8 1.2
25.6	35.74 -.34	69.2 3.2	6.65 -.26	18.1 2.2	61.04 -.40	21.0 +0.4	21.52 -.30	39.7 0.9
35.6	36.06 +.27	72.6 +2.3	6.90 +.23	20.3 +2.2	61.42 +.35	21.7 +0.9	21.81 +.27	38.9 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (Regulus)		γ^1 Leonis.		ϵ Leonis	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 9 ^m 45	[°] 26 ['] 37	^h 10 ^m 1	[°] 12 ['] 36	^h 10 ^m 12	[°] 20 ['] 30	^h 10 ^m 25	[°] 9 ['] 58
Jan. 0.6	12.37 +.30	41.3 -0.7	17.96 +.28	48.4 -1.5	38.80 +.30	35.2 -1.2	49.06 +.28	75.3 -1.8
10.6	12.64 -.25	40.8 0.4	18.22 -.24	47.1 1.2	39.08 -.26	34.2 0.9	49.33 -.26	73.6 1.5
20.6	12.87 -.20	40.6 -0.1	18.45 -.20	46.0 1.0	39.32 -.22	33.5 0.6	49.58 -.22	72.3 1.2
30.6	13.05 -.13	40.6 +0.2	18.63 -.15	45.1 0.7	39.52 -.17	33.1 -0.3	49.77 -.17	71.2 0.9
Feb. 9.5	13.17 -.10	41.0 0.5	18.75 -.10	44.6 0.4	39.67 -.12	33.0 0.0	49.92 -.12	70.5 0.6
19.5	13.24 +.04	41.6 0.7	18.83 -.05	44.3 -0.2	39.76 -.07	33.2 +0.3	50.02 -.08	70.0 0.4
Mar. 1.5	13.25 -.01	42.4 0.9	18.86 +.01	44.3 +0.1	39.80 +.02	33.6 0.5	50.08 +.03	69.7 -0.1
11.4	13.22 -.08	43.3 1.0	18.84 -.04	44.4 0.3	39.80 -.03	34.2 0.7	50.09 -.01	69.8 +0.1
21.4	13.14 -.09	44.4 1.1	18.79 -.07	44.8 0.4	39.75 -.06	35.0 0.8	50.06 -.05	70.0 0.3
31.4	13.03 -.13	45.5 1.1	18.70 -.10	45.2 0.5	39.67 -.10	35.9 0.9	49.99 -.08	70.3 0.4
April 10.4	12.89 -.13	46.5 1.0	18.59 -.12	45.8 0.6	39.56 -.12	36.8 0.9	49.90 -.10	70.8 0.5
20.3	12.73 -.16	47.5 0.9	18.46 -.13	46.5 0.6	39.43 -.13	37.7 0.9	49.78 -.12	71.4 0.6
30.3	12.57 -.16	48.3 0.8	18.32 -.14	47.1 0.7	39.29 -.14	38.6 0.8	49.66 -.13	72.1 0.7
May 10.3	12.41 -.16	49.1 0.6	18.18 -.14	47.8 0.7	39.15 -.14	39.4 0.8	49.53 -.13	72.8 0.7
20.3	12.25 -.16	49.6 0.5	18.04 -.13	48.4 0.6	39.01 -.14	40.1 0.7	49.40 -.13	73.4 0.7
30.2	12.11 -.13	50.0 0.3	17.91 -.12	49.0 0.6	38.87 -.13	40.7 0.5	49.27 -.12	74.1 0.6
June 9.2	11.99 -.11	50.2 +0.1	17.80 -.10	49.6 0.5	38.75 -.11	41.1 0.4	49.16 -.11	74.7 0.6
19.2	11.89 -.09	50.3 -0.1	17.71 -.08	50.1 0.5	38.65 -.09	41.5 0.2	49.05 -.09	75.3 0.5
29.1	11.82 -.06	50.1 0.2	17.63 -.06	50.5 0.4	38.56 -.07	41.6 +0.1	48.97 -.08	75.8 0.5
July 9.1	11.77 -.03	49.8 0.4	17.58 -.04	50.8 0.3	38.50 -.05	41.6 -0.1	48.90 -.06	76.3 0.4
19.1	11.75 -.01	49.3 0.6	17.54 -.02	51.0 0.3	38.46 -.03	41.5 0.2	48.85 -.04	76.6 0.3
29.1	11.75 +.02	48.7 0.7	17.54 +.01	51.1 +0.1	38.44 -.01	41.2 0.4	48.82 -.02	76.8 +0.2
Aug. 8.0	11.79 -.05	47.9 0.9	17.55 -.03	51.1 -0.1	38.45 +.02	40.7 0.6	48.82 +.01	76.9 0.6
18.0	11.86 -.08	46.9 1.1	17.60 -.06	51.0 0.2	38.48 -.05	40.1 0.7	48.84 -.03	76.9 -0.1
28.0	11.95 -.11	45.8 1.2	17.67 -.09	50.7 0.4	38.55 -.08	39.2 0.9	48.88 -.06	76.7 0.3
Sept. 7.0	12.08 -.15	44.5 1.3	17.77 -.12	50.2 0.6	38.65 -.11	38.2 1.1	48.96 -.09	76.3 0.5
16.9	12.25 -.18	43.1 1.5	17.91 -.15	49.5 0.8	38.78 -.15	37.1 1.3	49.07 -.12	75.7 0.7
26.9	12.44 -.21	41.6 1.6	18.07 -.18	48.6 1.0	38.94 -.18	35.7 1.4	49.21 -.16	74.9 0.9
Oct. 6.9	12.67 -.24	39.9 1.7	18.27 -.21	47.5 1.2	39.13 -.21	34.2 1.6	49.38 -.19	73.9 1.1
16.8	12.93 -.27	38.2 1.7	19.50 -.24	46.1 1.4	39.36 -.25	32.6 1.7	49.59 -.23	72.6 1.4
26.8	13.22 -.30	36.4 1.8	18.76 -.27	44.6 1.6	39.62 -.28	30.8 1.8	49.84 -.26	71.2 1.6
Nov. 5.8	13.53 -.32	34.6 1.8	19.04 -.30	43.0 1.7	39.91 -.30	28.9 1.9	50.11 -.28	69.5 1.7
15.8	13.87 -.31	32.9 1.7	19.35 -.31	41.2 1.8	40.23 -.32	27.1 1.9	50.40 -.31	67.7 1.8
25.7	14.21 -.33	31.2 1.6	19.67 -.32	39.4 1.8	40.56 -.33	25.2 1.8	50.72 -.32	65.8 1.9
Dec. 5.7	14.56 -.35	29.7 1.4	20.00 -.33	37.6 1.8	40.90 -.34	23.4 1.7	51.04 -.32	63.9 1.9
15.7	14.91 -.33	28.4 1.2	20.32 -.31	35.9 1.7	41.23 -.33	21.8 1.6	51.37 -.32	62.0 1.8
25.7	15.23 -.31	27.4 0.9	20.63 -.30	34.2 1.5	41.56 -.31	20.3 1.5	51.68 -.31	60.2 1.7
35.6	15.52 +.27	26.6 -0.7	20.91 +.27	32.8 -1.3	41.86 +.28	19.1 -1.0	51.98 +.28	58.5 -1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Argus.		ι Leonis.		α Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 10 ^m 39	[°] 58 ['] 58	^h 10 ^m 42	[°] 11 ['] 14	^h 10 ^m 55	[°] 62 ['] 27	^h 11 ^m 7	[°] 21 ['] 14
Jan. 0.7	56.76 +.43	55.3 +2.0	16.35 +.30	44.8 -1.7	30.79 +.06	45.7 +0.1	2.25 +.38	56.3 -1.4
10.6	57.16 .38	58.4 2.2	16.64 .27	43.3 1.4	30.33 .51	46.0 0.7	2.56 .30	55.0 1.1
20.6	57.51 .31	61.7 2.4	16.89 .23	42.0 1.2	30.81 .43	47.0 1.2	2.84 .26	54.0 0.8
30.6	57.79 .24	65.2 2.6	17.10 .19	40.9 0.9	31.23 .37	48.4 1.7	3.09 .22	53.4 0.4
Feb. 9.6	57.98 .16	68.9 2.7	17.27 .14	40.2 0.6	31.56 .28	50.3 2.1	3.29 .18	53.1 -0.1
19.5	58.10 .08	72.6 2.6	17.39 .09	39.8 0.3	31.79 .19	52.6 2.4	3.44 .13	53.2 +0.2
Mar. 1.5	58.15 +.01	76.2 2.5	17.46 .06	39.6 -0.1	31.94 +.09	55.2 2.6	3.54 .08	53.6 0.5
11.5	58.12 -.06	79.6 2.3	17.49 +.01	39.7 +0.2	31.98 .00	57.8 2.7	3.59 +.03	54.3 0.8
21.5	58.02 .12	82.9 2.1	17.47 -.08	39.9 0.4	31.93 -.09	60.6 2.7	3.60 -.01	55.2 1.0
31.4	57.86 .18	85.8 2.0	17.42 .06	40.4 0.5	31.80 .17	63.2 2.6	3.57 .06	56.2 1.1
April 10.4	57.65 .28	89.4 2.4	17.34 .09	41.0 0.6	31.60 .23	65.7 2.3	3.51 .08	57.3 1.1
20.4	57.40 .27	90.6 2.0	17.23 .11	41.7 0.7	31.33 .28	67.9 2.0	3.42 .10	58.5 1.1
30.3	57.12 .29	92.4 1.5	17.12 .19	42.4 0.7	31.03 .32	69.7 1.7	3.31 .12	59.6 1.1
May 10.3	56.82 .21	93.7 1.1	16.99 .13	43.1 0.7	30.69 .35	71.2 1.2	3.18 .13	60.7 1.0
20.3	56.49 .22	94.5 0.6	16.87 .13	43.9 0.7	30.33 .36	72.2 0.8	3.05 .12	61.6 0.9
30.3	56.17 .23	94.8 +0.1	16.74 .12	44.6 0.7	29.98 .35	72.8 +0.3	2.92 .12	62.5 0.8
June 9.2	55.84 .22	94.6 -0.4	16.62 .11	45.2 0.6	29.63 .34	72.8 -0.2	2.79 .12	63.2 0.6
19.2	55.52 .21	94.0 0.9	16.52 .10	45.8 0.5	29.30 .31	72.4 0.7	2.67 .12	63.6 0.4
29.2	55.22 .20	92.8 1.4	16.42 .09	46.3 0.5	29.00 .28	71.5 1.1	2.56 .10	64.0 +0.2
July 9.2	54.95 .20	91.2 1.8	16.34 .07	46.7 0.4	28.74 .24	70.2 1.6	2.46 .09	64.1 0.0
19.1	54.71 .22	89.2 2.2	16.28 .05	47.0 0.2	28.52 .20	68.4 1.9	2.38 .07	64.0 -0.2
29.1	54.51 .19	86.9 2.5	16.24 .03	47.2 +0.1	28.35 .15	66.3 2.2	2.32 .05	63.7 0.4
Aug. 8.1	54.35 .13	84.2 2.7	16.22 -.01	47.2 0.0	28.23 .09	63.9 2.6	2.28 .03	63.3 0.6
18.0	54.26 -.06	81.5 2.8	16.23 +.02	47.1 -0.2	28.17 -.03	61.2 2.8	2.26 -.01	62.6 0.8
28.0	54.23 .00	78.6 2.9	16.26 .03	46.8 0.4	28.16 +.03	58.2 3.0	2.26 +.02	61.7 1.0
Sept. 7.0	54.26 +.07	75.7 2.6	16.32 .06	46.9 0.6	28.23 .09	55.1 2.1	2.30 .06	60.6 1.2
17.0	54.37 .14	72.9 2.7	16.41 .11	45.6 0.8	28.35 .16	51.9 2.2	2.37 .09	59.3 1.4
26.9	54.55 .22	70.3 2.4	16.53 .14	44.7 1.0	28.55 .22	48.7 2.8	2.47 .12	57.8 1.6
Oct. 6.9	54.81 .29	68.1 2.0	16.70 .18	43.6 1.2	28.81 .29	45.4 2.2	2.62 .16	56.1 1.8
16.9	55.13 .35	66.3 1.5	16.89 .21	42.2 1.4	29.14 .36	42.2 2.1	2.80 .20	54.2 2.0
26.9	55.52 .41	65.0 1.0	17.12 .25	40.7 1.6	29.54 .43	39.3 2.9	3.02 .24	52.2 2.0
Nov. 5.8	55.96 .46	64.3 -0.4	17.39 .26	38.9 1.8	30.00 .49	36.5 2.6	3.27 .27	50.1 2.2
15.8	56.44 .49	64.3 +0.2	17.68 .30	37.1 1.9	30.52 .53	34.0 2.2	3.56 .30	47.9 2.2
25.8	56.94 .51	64.8 0.8	17.99 .32	35.1 2.0	31.07 .57	32.0 1.8	3.88 .32	45.7 2.0
Dec. 5.7	57.46 .51	66.0 1.5	18.31 .33	33.1 2.0	31.66 .59	30.4 1.3	4.21 .34	43.6 2.0
15.7	57.97 .49	67.7 2.0	18.64 .32	31.2 1.9	32.25 .50	29.3 0.8	4.55 .31	41.7 1.8
25.7	58.44 .46	70.0 2.5	18.96 .31	29.4 1.8	32.85 .46	28.8 -0.2	4.89 .33	40.0 1.6
35.7	58.88 +.42	72.8 +2.0	19.27 +.29	27.7 -1.6	33.42 +.45	28.8 +0.2	5.22 +.32	38.5 -1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Crateris.		τ Leonis.		91 Leonis (ν).		β Leonis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 11 ^m 12	[°] 14 ['] 3	^h 11 ^m 21	[°] 3 ['] 34	^h 11 ^m 30	[°] 0 ['] 5	^h 11 ^m 42	[°] 15 ['] 16
Jan. 0.7	42.26 +.31	32.6 +2.3	6.25 +.31	73.9 -1.0	8.78 +.31	25.6 +2.0	16.60 +.32	48.8 -1.7
10.7	42.55 .28	34.9 2.3	6.55 .29	72.0 1.8	9.08 .29	27.6 1.9	16.91 .30	47.2 1.8
20.6	42.81 .25	37.3 2.3	6.82 .26	70.2 1.6	9.36 .26	29.5 1.8	17.21 .28	45.8 1.2
30.6	43.04 .21	39.5 2.2	7.06 .22	68.7 1.4	9.60 .22	31.2 1.6	17.47 .24	44.8 0.9
Feb. 9.6	43.23 .16	41.7 2.0	7.25 .17	67.5 1.1	9.80 .18	32.6 1.3	17.69 .20	44.1 0.5
19.6	43.37 .12	43.6 1.8	7.41 .13	66.5 0.8	9.96 .14	33.8 1.1	17.87 .16	43.7 -0.2
Mar. 1.5	43.47 .07	45.3 1.6	7.51 .09	65.8 0.6	10.08 .09	34.8 0.8	18.00 .11	43.7 +0.1
11.5	43.52 +.03	46.8 1.4	7.58 .03	65.4 0.3	10.15 .05	35.4 0.5	18.09 .07	44.0 0.4
21.5	43.53 -0.1	48.0 1.1	7.60 +0.1	65.2 -0.1	10.18 +0.1	35.8 0.3	18.13 +.03	44.5 0.8
31.5	43.51 .04	49.0 0.9	7.59 -0.3	65.2 +0.1	10.18 -0.2	36.0 +0.1	18.14 -0.1	45.3 0.8
April 10.4	43.45 .07	49.7 0.6	7.54 .06	65.5 0.3	10.14 .05	36.0 -0.1	18.11 .04	46.1 0.9
20.4	43.37 .09	50.2 0.4	7.47 .08	65.9 0.4	10.08 .07	35.7 0.3	18.05 .07	47.1 1.0
30.4	43.27 .10	50.5 +0.1	7.38 .09	66.4 0.6	10.00 .09	35.4 0.4	17.97 .09	48.2 1.0
May 10.3	43.16 .11	50.5 -0.1	7.28 .10	67.0 0.6	9.91 .10	34.9 0.5	17.87 .10	49.2 1.0
20.3	43.05 .12	50.3 0.3	7.17 .11	67.6 0.7	9.80 .11	34.4 0.6	17.76 .11	50.2 1.0
30.3	42.92 .12	49.9 0.5	7.06 .11	68.3 0.7	9.69 .11	33.7 0.7	17.65 .12	51.1 0.9
June 9.3	42.80 .12	49.3 0.6	6.95 .11	69.0 0.7	9.58 .11	33.1 0.7	17.53 .12	51.9 0.8
19.2	42.68 .11	48.6 0.8	6.84 .11	69.7 0.7	9.47 .11	32.3 0.7	17.41 .12	52.6 0.6
29.2	42.57 .11	47.7 1.0	6.73 .10	70.4 0.7	9.36 .10	31.6 0.7	17.30 .11	53.2 0.3
July 9.2	42.47 .10	46.7 1.1	6.64 .09	71.0 0.6	9.26 .09	30.9 0.7	17.19 .10	53.6 0.3
19.2	42.38 .08	45.6 1.1	6.55 .08	71.6 0.5	9.17 .08	30.2 0.7	17.09 .09	53.8 +0.1
29.1	42.31 .06	44.4 1.2	6.49 .06	72.1 0.5	9.10 .07	29.6 0.6	17.01 .08	53.9 0.0
Aug. 8.1	42.25 .04	43.2 1.2	6.43 .04	72.5 0.3	9.04 .06	29.1 0.5	16.93 .06	53.7 -0.2
18.1	42.22 .02	42.1 1.1	6.40 .02	72.8 +0.2	9.00 .03	28.6 0.4	16.88 .04	53.4 0.4
28.0	42.21 +0.1	41.0 1.0	6.39 +0.1	72.9 0.0	8.98 .00	28.3 0.2	16.85 -0.2	52.9 0.6
Sept. 7.0	42.23 .04	40.0 0.9	6.41 .04	72.8 -0.2	8.99 +.03	28.1 -0.1	16.85 +0.1	52.1 0.9
17.0	42.20 .07	39.2 0.7	6.46 .07	72.5 0.4	9.03 .06	28.2 +0.2	16.88 .06	51.1 1.1
27.0	42.38 .11	38.7 0.4	6.55 .10	72.1 0.6	9.11 .09	28.5 0.4	16.94 .08	49.9 1.3
Oct. 6.9	42.51 .15	38.4 -0.1	6.67 .14	71.3 0.9	9.22 .13	29.0 0.7	17.04 .12	48.5 1.8
16.9	42.68 .19	38.4 +0.2	6.83 .18	70.3 1.1	9.37 .17	29.8 0.9	17.19 .16	46.8 1.7
26.9	42.89 .23	38.8 0.6	7.03 .22	69.0 1.4	9.56 .21	30.9 1.2	17.37 .20	45.0 1.9
Nov. 5.8	43.14 .26	39.6 1.0	7.26 .25	67.5 1.6	9.79 .25	32.2 1.6	17.59 .24	42.9 2.1
15.8	43.42 .29	40.7 1.3	7.53 .28	65.8 1.8	10.05 .28	33.8 1.7	17.85 .27	40.8 2.2
25.8	43.72 .31	42.2 1.6	7.82 .30	63.9 2.0	10.34 .30	35.6 1.9	18.14 .30	38.6 2.2
Dec. 5.8	44.04 .33	44.0 1.9	8.14 .32	61.9 2.0	10.65 .32	37.6 2.0	18.45 .32	36.4 2.2
15.7	44.37 .33	46.0 2.1	8.46 .32	59.8 2.1	10.98 .32	39.7 2.1	18.78 .33	34.3 2.1
25.7	44.69 .32	48.2 2.3	8.78 .32	57.7 2.0	11.30 .32	41.8 2.1	19.11 .32	32.3 1.9
35.7	45.01 +.30	50.5 +2.4	9.10 +.30	55.8 -1.9	11.61 +.31	43.9 +2.0	19.44 +.32	30.5 -1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursæ Majoris.		ϵ Virginis.		η Virginis.		α^1 Crucis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 11 46	^m 54 25	^h 11 58	^m 9 27	^h 12 13	^m 0 4	^h 12 19	^m 62 21
Jan. 0.7	48.93 +.48	45.5 -0.8	26.21 +.32	73.0 -1.9	6.28 +.32	20.3 -2.1	14.40 +.88	20.1 +1.7
10.7	49.40 -.46	45.0 -0.2	26.52 -.30	71.1 1.7	6.59 -.31	18.3 2.0	14.96 -.84	22.1 2.2
20.7	49.85 -.42	45.1 +0.4	26.82 -.28	69.5 1.8	6.89 -.28	16.4 1.8	15.48 -.80	24.4 2.6
30.6	50.24 -.37	45.8 0.9	27.08 -.25	68.2 1.2	7.16 -.25	14.7 1.6	15.96 -.44	27.2 2.9
Feb. 9.6	50.59 -.31	46.9 1.4	27.31 -.31	67.1 0.9	7.39 -.22	13.2 1.4	16.37 -.38	30.3 3.2
19.6	50.86 -.24	48.6 1.8	27.50 -.17	66.4 0.6	7.59 -.18	12.0 1.1	16.71 -.31	33.6 3.4
Mar. 1.6	51.06 -.17	50.6 2.2	27.65 -.12	66.0 -0.2	7.75 -.14	11.0 0.8	16.98 -.22	37.0 3.8
11.5	51.19 -.09	52.9 2.4	27.75 -.08	66.0 0.0	7.86 -.10	10.3 0.5	17.17 -.16	40.5 3.5
21.5	51.24 +.02	55.4 2.6	27.81 -.04	66.1 +0.3	7.94 -.06	9.9 0.3	17.29 -.08	44.0 3.4
31.5	51.23 -.05	58.0 2.6	27.83 +.01	66.5 0.5	7.98 +.02	9.8 -0.1	17.34 +.01	47.3 3.3
April 10.4	51.15 -.11	60.6 2.8	27.82 -.08	67.1 0.7	7.98 -.01	9.8 +0.1	17.32 -.08	50.5 3.1
20.4	51.02 -.16	63.0 2.3	27.78 -.05	67.9 0.8	7.96 -.04	10.1 0.3	17.24 -.11	53.5 2.8
30.4	50.84 -.20	65.2 2.1	27.72 -.07	68.7 0.8	7.91 -.06	10.4 0.4	17.10 -.17	56.1 2.6
May 10.4	50.63 -.22	67.2 1.8	27.64 -.09	69.6 0.9	7.85 -.07	10.9 0.5	16.91 -.22	58.4 2.1
20.3	50.40 -.24	68.8 1.4	27.54 -.10	70.5 0.9	7.77 -.09	11.5 0.6	16.67 -.26	60.4 1.7
30.3	50.15 -.28	70.0 1.0	27.44 -.11	71.3 0.8	7.67 -.10	12.2 0.7	16.39 -.29	61.9 1.3
June 9.3	49.89 -.26	70.7 0.6	27.33 -.11	72.1 0.8	7.57 -.10	12.9 0.7	16.09 -.32	62.9 0.8
19.3	49.63 -.23	71.1 +0.1	27.22 -.11	72.9 0.7	7.46 -.11	13.6 0.7	15.76 -.34	63.5 +0.3
29.2	49.38 -.24	70.9 -0.4	27.11 -.11	73.5 0.6	7.35 -.11	14.3 0.7	15.41 -.35	63.6 -0.2
July 9.2	49.15 -.22	70.3 0.8	27.00 -.11	74.1 0.5	7.25 -.11	15.0 0.7	15.06 -.36	63.2 0.6
19.2	48.93 -.20	69.3 1.2	26.90 -.10	74.5 0.3	7.14 -.10	15.6 0.6	14.71 -.34	62.4 1.1
29.1	48.75 -.17	67.9 1.6	26.81 -.09	74.8 0.2	7.04 -.09	16.2 0.6	14.37 -.32	61.0 1.5
Aug. 8.1	48.59 -.14	66.1 2.0	26.72 -.07	74.9 +0.1	6.95 -.08	16.7 0.5	14.06 -.29	59.3 1.9
18.1	48.47 -.10	63.9 2.3	26.66 -.05	74.9 -0.1	6.88 -.06	17.1 0.3	13.79 -.24	57.1 2.3
28.1	48.39 -.06	61.4 2.6	26.62 -.03	74.7 0.3	6.82 -.04	17.4 +0.2	13.57 -.19	54.7 2.6
Sept. 7.0	48.35 -.01	58.7 2.9	26.60 -.00	74.3 0.5	6.79 -.02	17.5 0.0	13.42 -.12	52.1 2.7
17.0	48.37 +.04	55.7 3.1	26.61 +.03	73.7 0.8	6.79 +.01	17.4 -0.2	13.33 -.04	49.3 2.8
27.0	48.44 -.10	52.6 2.2	26.66 -.06	72.8 1.0	6.82 -.06	17.1 0.4	13.33 +.04	46.6 2.7
Oct. 7.0	48.57 -.16	49.4 2.3	26.74 -.10	71.7 1.2	6.89 -.09	16.6 0.7	13.42 -.12	43.9 2.6
16.9	48.76 -.22	46.1 2.3	26.87 -.15	70.4 1.5	7.00 -.12	15.8 0.9	13.60 -.22	41.4 2.3
26.9	49.01 -.28	42.8 2.2	27.04 -.19	68.8 1.7	7.15 -.18	14.7 1.2	13.87 -.31	39.3 2.0
Nov. 5.9	49.32 -.34	39.7 2.0	27.24 -.23	67.0 1.9	7.35 -.22	13.4 1.5	14.22 -.39	37.5 1.5
15.8	49.68 -.39	36.7 2.8	27.49 -.26	65.0 2.0	7.58 -.23	11.8 1.7	14.65 -.46	36.2 1.0
25.8	50.09 -.43	34.1 2.5	27.77 -.29	62.9 2.1	7.85 -.28	10.0 1.9	15.14 -.52	35.5 -0.4
Dec. 5.8	50.55 -.47	31.7 2.1	28.07 -.31	60.8 2.2	8.15 -.30	8.0 2.0	15.68 -.56	35.4 +0.2
15.8	51.02 -.49	29.9 1.6	28.39 -.32	58.6 2.1	8.46 -.32	6.0 2.1	16.25 -.58	35.8 0.8
25.7	51.51 -.49	28.5 1.1	28.72 -.32	56.5 2.0	8.79 -.32	3.8 2.1	16.84 -.58	36.9 1.3
35.7	52.00 +.48	27.6 -0.6	29.04 +.32	54.5 -1.9	9.11 +.32	1.8 -2.1	17.41 +.57	38.5 +1.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Corvi.		12 Can. Venaticorum.		δ Virginis.		α Virginis. (Spica.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 12 ^m 27	[°] 22 ['] 39	^h 12 ^m 49	[°] 39 ['] 1	^h 13 ^m 3	[°] 4 ['] 49	^h 13 ^m 18	[°] 10 ['] 27
Jan. 0.8	24.57 +.33	32.9 +2.1	47.53 +.38	62.4 -1.6	3.68 +.32	38.6 +2.0	11.24 +.32	52.4 +2.0
10.7	24.91 -.33	34.3 2.2	47.91 -.38	60.8 1.3	4.20 -.32	40.6 2.0	11.57 -.32	54.3 2.0
20.7	25.23 -.30	36.6 2.3	48.29 -.36	59.8 0.8	4.51 -.30	42.6 1.9	11.89 -.31	56.3 1.9
30.7	25.52 -.27	38.9 2.3	48.64 -.34	59.3 -0.3	4.81 -.28	44.5 1.8	12.19 -.29	58.2 1.8
Feb. 9.6	25.78 -.24	41.2 2.3	48.96 -.30	59.3 +0.3	5.07 -.26	46.2 1.6	12.47 -.26	59.0 1.7
19.6	25.99 -.20	43.5 2.2	49.23 -.28	59.8 0.8	5.31 -.23	47.6 1.5	12.72 -.23	61.7 1.5
Mar. 1.6	26.17 -.16	45.6 2.0	49.46 -.21	60.8 1.2	5.51 -.18	48.8 1.1	12.94 -.20	63.1 1.3
11.6	26.30 -.11	47.5 1.6	49.65 -.15	62.2 1.6	5.67 -.16	49.7 0.8	13.12 -.16	64.4 1.1
21.5	26.40 -.07	49.3 1.6	49.77 -.10	63.9 1.9	5.80 -.11	50.4 0.6	13.26 -.12	65.4 0.9
31.5	26.45 -.04	50.8 1.4	49.85 -.06	65.9 2.1	5.89 -.07	50.9 0.3	13.36 -.09	66.1 0.6
April 10.5	26.47 +.03	52.1 1.2	49.88 +.01	68.1 2.2	5.95 -.04	51.1 +0.1	13.44 -.06	66.6 0.4
20.5	26.46 -.02	53.1 1.0	49.87 -.03	70.4 2.2	5.97 +.01	51.1 -0.1	13.48 +.03	67.0 0.2
30.4	26.43 -.06	54.0 0.7	49.82 -.07	72.6 2.2	5.97 -.01	50.9 0.2	13.49 -.01	67.1 +0.1
May 10.4	26.37 -.07	54.6 0.5	49.74 -.10	74.7 2.0	5.95 -.04	50.6 0.4	13.48 -.02	67.1 -0.1
20.4	26.29 -.09	54.9 +0.2	49.62 -.12	76.6 1.8	5.90 -.06	50.2 0.6	13.45 -.04	67.0 0.2
30.3	26.19 -.10	55.1 0.6	49.49 -.14	78.4 1.6	5.84 -.07	49.7 0.5	13.40 -.06	66.7 0.3
June 9.3	26.08 -.11	55.0 -0.2	49.34 -.16	79.8 1.3	5.75 -.09	49.1 0.6	13.33 -.08	66.3 0.4
19.3	25.97 -.12	54.7 0.4	49.17 -.17	80.9 0.9	5.66 -.10	48.5 0.6	13.24 -.10	65.9 0.5
29.3	25.84 -.13	54.1 0.6	49.00 -.17	81.6 0.3	5.56 -.11	47.8 0.7	13.13 -.11	65.3 0.6
July 9.2	25.71 -.13	53.4 0.3	48.83 -.17	81.9 +0.2	5.45 -.11	47.2 0.7	13.02 -.12	64.7 0.6
19.2	25.58 -.13	52.5 1.0	48.65 -.17	81.9 -0.2	5.33 -.12	46.5 0.7	12.90 -.12	64.0 0.7
29.2	25.46 -.13	51.5 1.1	48.48 -.16	81.5 0.6	5.21 -.12	45.8 0.6	12.77 -.13	63.3 0.7
Aug. 8.2	25.34 -.11	50.3 1.2	48.33 -.15	80.7 1.0	5.09 -.11	45.2 0.6	12.65 -.12	62.6 0.7
18.1	25.24 -.09	49.0 1.3	48.19 -.13	79.6 1.3	4.99 -.10	44.7 0.5	12.53 -.11	61.9 0.7
28.1	25.16 -.07	47.8 1.3	48.06 -.11	78.1 2.7	4.89 -.08	44.2 0.4	12.42 -.10	61.3 0.6
Sept. 7.1	25.10 -.04	46.5 1.2	47.97 -.08	76.2 2.0	4.82 -.06	43.9 0.2	12.33 -.08	60.7 0.5
17.0	25.08 -.06	45.3 1.1	47.91 -.04	74.1 2.3	4.77 -.08	43.7 -0.1	12.27 -.06	60.3 0.4
27.0	25.10 +.04	44.3 0.9	47.88 -.00	71.6 2.6	4.75 -.06	43.7 +0.1	12.24 -.01	60.0 -0.2
Oct. 7.0	25.15 -.06	43.5 0.7	47.90 +.05	68.9 2.8	4.77 +.04	44.0 0.3	12.24 +.03	59.9 0.3
17.0	25.26 -.13	42.9 0.4	47.98 -.10	66.1 2.9	4.83 -.06	44.4 0.6	12.29 -.07	60.0 +0.2
26.9	25.41 -.18	42.7 -0.1	48.10 -.15	63.1 2.6	4.93 -.13	45.2 0.9	12.38 -.12	60.3 0.5
Nov. 5.9	25.61 -.23	42.8 +0.2	48.27 -.20	60.0 2.1	5.09 -.18	46.2 1.1	12.52 -.16	61.0 0.6
15.9	25.85 -.26	43.2 0.7	48.50 -.25	56.9 2.0	5.28 -.23	47.5 1.4	12.71 -.21	61.9 1.1
25.9	26.13 -.30	44.1 1.0	48.78 -.30	53.9 2.2	5.52 -.26	49.0 1.6	12.94 -.25	63.1 1.3
Dec. 5.8	26.44 -.33	45.3 1.4	49.09 -.34	51.1 2.7	5.79 -.30	50.7 1.8	13.21 -.28	64.6 1.5
15.8	26.77 -.34	46.8 1.7	49.45 -.36	48.5 2.4	6.09 -.31	52.6 2.4	13.50 -.31	66.3 1.8
25.8	27.11 -.34	48.7 2.0	49.82 -.38	46.2 2.1	6.41 -.33	54.6 2.6	13.82 -.32	68.1 1.9
35.7	27.46 +.34	50.7 +2.2	50.20 +.39	44.3 -1.6	6.74 +.33	56.7 +2.6	14.15 +.33	70.1 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginia.		γ Ursa Majoris.		γ Bootis.		β Centauri.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 13 27	^m 0 4	^h 13 42	^m 49 56	^h 13 48	^m 19 3	^h 13 54	^m 59 43
Jan. 0.8	54.77 +.32	68.0 -2.1	16.57 +.41	29.3 -2.1	20.51 +.32	52.5 -2.2	27.88 +.38	25.9 +0.8
10.8	55.09 -.32	66.9 2.0	17.00 -.42	27.4 1.6	20.84 -.32	50.4 2.0	28.43 -.36	26.6 1.0
20.7	55.41 -.31	65.0 1.8	17.43 -.42	26.1 1.0	21.17 -.32	48.6 1.7	28.99 -.32	27.8 1.4
30.7	55.71 -.29	63.3 1.6	17.86 -.41	25.3 -0.4	21.48 -.31	47.1 1.3	29.53 -.32	29.5 1.9
Feb. 9.7	55.99 -.27	61.7 1.4	18.26 -.39	25.2 +0.2	21.78 -.29	46.0 0.8	30.04 -.28	31.6 2.2
19.7	56.24 -.24	60.5 1.1	18.62 -.38	25.7 0.8	22.06 -.28	45.4 -0.4	30.51 -.28	33.0 2.6
Mar. 1.6	56.46 -.20	59.5 0.8	18.95 -.36	26.8 1.2	22.30 -.28	45.8 0.0	30.93 -.28	36.6 2.7
11.6	56.64 -.17	58.9 0.5	19.22 -.35	28.3 1.6	22.51 -.19	45.4 +0.4	31.30 -.24	39.4 2.9
21.6	56.79 -.13	58.5 -0.2	19.44 -.19	30.3 2.2	22.68 -.18	46.1 0.8	31.61 -.28	42.3 2.9
31.5	56.91 -.10	58.3 0.0	19.60 -.12	32.7 2.8	22.82 -.12	47.0 1.1	31.85 -.22	45.3 2.0
April 10.5	56.99 -.08	58.4 +0.2	19.70 -.07	25.3 2.7	22.91 -.08	48.2 1.3	32.04 -.16	48.2 2.9
20.5	57.04 -.08	58.8 0.4	19.75 +.02	38.0 2.7	22.98 -.08	49.6 1.5	32.17 -.10	51.1 2.8
30.5	57.06 +.01	59.2 0.6	19.74 -.02	40.8 2.7	23.01 +.02	51.1 1.6	32.24 +.04	53.0 2.7
May 10.4	57.05 -.02	59.8 0.6	19.68 -.08	43.5 2.6	23.01 -.01	52.7 1.6	32.25 -.02	56.5 2.8
20.4	57.03 -.04	60.5 0.7	19.58 -.12	46.0 2.4	22.99 -.04	54.3 1.6	32.20 -.07	58.9 2.3
30.4	56.98 -.06	61.3 0.7	19.45 -.16	48.2 2.1	22.94 -.06	55.9 1.8	32.10 -.12	61.0 2.0
June 9.4	56.91 -.08	62.0 0.8	19.27 -.19	50.2 1.8	22.87 -.08	57.3 1.3	31.95 -.18	62.9 1.8
19.3	56.82 -.09	62.8 0.8	19.08 -.21	51.8 1.4	22.77 -.10	58.5 1.2	31.75 -.22	64.3 1.3
29.3	56.73 -.10	63.5 0.7	18.85 -.22	52.9 1.0	22.67 -.12	59.6 1.0	31.51 -.26	65.4 0.9
July 9.3	56.61 -.12	64.2 0.7	18.62 -.24	53.7 0.5	22.54 -.12	60.5 0.8	31.23 -.29	66.0 +0.4
19.2	56.49 -.12	64.9 0.6	18.37 -.25	54.0 +0.1	22.41 -.14	61.1 0.5	30.92 -.31	66.2 0.0
29.2	56.37 -.12	65.4 0.5	18.13 -.26	53.8 -0.4	22.27 -.14	61.5 +0.2	30.60 -.28	65.9 -0.8
Aug. 8.2	56.24 -.12	65.9 0.4	17.88 -.24	53.1 0.0	22.12 -.14	61.7 0.0	30.27 -.23	65.2 0.9
18.2	56.12 -.12	66.3 0.3	17.64 -.22	52.0 1.2	21.98 -.14	61.5 -0.2	29.94 -.22	64.1 1.2
28.1	56.01 -.10	66.5 +0.2	17.42 -.21	50.5 1.7	21.85 -.12	61.1 0.0	29.63 -.20	62.6 1.7
Sept. 7.1	55.92 -.08	66.6 0.0	17.23 -.18	48.6 2.1	21.73 -.11	60.3 0.0	29.36 -.22	60.7 2.0
17.1	55.84 -.08	66.5 -0.2	17.07 -.14	46.2 2.5	21.63 -.08	59.3 1.2	29.14 -.20	58.6 2.2
27.1	55.80 -.02	66.3 0.4	16.94 -.10	43.6 2.8	21.56 -.06	58.0 1.4	28.97 -.18	56.3 2.4
Oct. 7.0	55.80 +.02	65.8 0.6	16.87 -.04	40.6 2.1	21.53 -.01	56.5 1.7	28.88 -.08	53.8 2.6
17.0	55.83 -.02	65.0 0.9	16.86 +.01	37.4 2.2	21.53 +.02	54.6 2.0	28.88 -0.4	51.3 2.4
27.0	55.91 -.10	64.0 1.1	16.90 -.08	34.0 2.4	21.59 -.08	52.6 2.2	28.96 -.12	49.0 2.2
Nov. 5.9	56.04 -.12	62.8 1.4	17.01 -.14	30.5 2.8	21.69 -.12	50.3 2.4	29.13 -.22	46.8 2.9
15.9	56.21 -.19	61.3 1.6	17.19 -.21	26.9 2.5	21.84 -.17	47.8 2.5	29.39 -.28	44.9 1.7
25.9	56.42 -.22	59.6 1.8	17.42 -.27	23.5 2.4	22.03 -.22	45.2 2.8	29.73 -.32	43.4 1.2
Dec. 5.9	56.68 -.27	57.7 1.9	17.72 -.32	20.2 2.2	22.27 -.26	42.6 2.6	30.15 -.38	42.3 0.8
15.8	56.96 -.30	55.7 2.0	18.07 -.27	17.1 2.2	22.55 -.29	40.0 2.2	30.63 -.40	41.7 -0.2
25.8	57.27 -.31	53.6 2.1	18.46 -.20	14.5 2.5	22.85 -.31	37.5 2.4	31.15 -.38	41.6 +0.2
35.8	57.59 +.22	51.5 -2.1	18.88 +.23	12.2 -2.0	23.18 +.22	35.2 -2.2	31.69 +.22	42.1 +0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Bootis. (Arcturus.)		δ Bootis.		α^* Centauri.		ϵ Bootis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 14	^m 9	^h 14	^m 20	^h 14	^m 30	^h 14	^m 39
	^s 19	^s 52	^s 52	^s 27	^s 16	^s 16	^s 27	^s 37
Jan. 0.8	34.97 +.31	32.6 -2.4	38.44 +.41	49.2 -2.5	35.81 +.53	33.2 0-0	9.70 +.31	67.5 -2.5
10.8	35.29 .32	30.4 2-1	38.86 .43	47.0 2-0	36.35 .55	33.4 +0-5	10.02 .33	65.1 2-2
20.8	35.62 .32	28.4 1-8	39.30 .44	45.2 1-4	36.90 .55	34.1 0-9	10.35 .33	63.1 1-8
30.7	35.93 .31	26.8 1-4	39.74 .44	44.1 0-8	37.45 .54	35.3 1-4	10.68 .33	61.5 1-4
Feb. 9.7	36.24 .29	25.7 1-0	40.17 .42	43.7 -0-2	37.99 .52	36.8 1-7	11.01 .32	60.3 0-9
19.7	36.52 .27	24.9 0-5	40.58 .39	43.8 +0-5	38.49 .48	38.7 2-0	11.32 .30	59.7 -0-4
Mar. 1.7	36.78 .24	24.6 -0-1	40.95 .38	44.6 1-1	38.96 .44	40.9 2-3	11.60 .27	59.6 +0-1
11.6	37.00 .21	24.8 +0-3	41.28 .30	45.9 1-6	39.37 .39	43.4 2-5	11.86 .24	60.0 0-6
21.6	37.19 .17	25.3 0-7	41.55 .23	47.8 2-1	39.74 .34	46.0 2-7	12.08 .21	60.8 1-1
31.6	37.34 .14	26.2 1-0	41.77 .19	50.0 2-4	40.05 .28	48.7 2-7	12.27 .17	62.1 1-4
April 10.5	37.46 .10	27.4 1-3	41.93 .13	52.6 2-7	40.30 .22	51.5 2-8	12.42 .13	63.7 1-7
20.5	37.54 .07	28.8 1-5	42.04 .07	55.4 2-8	40.50 .16	54.2 2-8	12.54 .10	65.5 1-7
30.5	37.60 .04	30.4 1-6	42.08 +.02	58.3 2-9	40.63 .10	57.0 2-7	12.62 .06	67.6 2-1
May 10.5	37.62 +.01	32.1 1-7	42.07 -0-4	61.2 2-8	40.70 +.04	59.6 2-5	12.67 +.03	69.7 2-1
20.4	37.61 -0-2	33.7 1-6	42.01 .09	63.9 2-7	40.71 -0-2	62.1 2-4	12.68 .00	71.9 2-1
30.4	37.57 .05	35.3 1-6	41.90 .13	66.5 2-4	40.66 .06	64.3 2-1	12.66 -0-3	73.9 2-0
June 9.4	37.51 .07	36.8 1-4	41.75 .17	68.8 2-1	40.55 .14	66.3 1-9	12.61 .06	75.9 1-9
19.4	37.43 .09	38.2 1-3	41.56 .20	70.8 1-8	40.39 .19	68.0 1-6	12.53 .09	77.7 1-7
29.3	37.32 .11	39.4 1-1	41.34 .23	72.3 1-4	40.17 .24	69.4 1-2	12.43 .11	79.2 1-4
July 9.3	37.20 .13	40.3 0-8	41.09 .26	73.5 0-9	39.90 .28	70.4 0-6	12.30 .14	80.5 1-1
19.3	37.06 .14	41.0 0-6	40.82 .27	74.2 +0-4	39.60 .32	71.0 +0-4	12.15 .13	81.4 0-8
29.2	36.92 .15	41.5 +0-3	40.54 .28	74.4 -0-1	39.27 .35	71.1 -0-1	11.99 .17	82.1 0-4
Aug. 8.2	36.76 .15	41.6 0-0	40.26 .29	74.1 0-5	38.91 .35	70.8 0-5	11.82 .18	82.4 +0-1
18.2	36.61 .15	41.5 -0-3	39.97 .26	73.3 1-0	38.55 .35	70.1 0-9	11.64 .18	82.3 -0-2
28.2	36.46 .14	41.1 0-6	39.70 .27	72.0 1-5	38.20 .34	68.9 1-3	11.46 .17	81.9 0-6
Sept. 7.1	36.32 .13	40.4 0-9	39.44 .24	70.4 1-9	37.87 .31	67.4 1-7	11.29 .16	81.1 1-0
17.1	36.20 .11	39.4 1-3	39.21 .21	68.2 2-3	37.58 .26	65.5 2-0	11.14 .14	80.0 1-3
27.1	36.11 .08	38.1 1-5	39.02 .17	65.7 2-7	37.35 .20	63.4 2-2	11.01 .11	78.5 1-6
Oct. 7.1	36.05 -0-4	36.4 1-7	38.98 .13	62.9 2-0	37.18 .13	61.0 2-4	10.92 .08	76.7 2-0
17.0	36.03 +.01	34.6 2-0	38.79 -0-6	59.7 2-3	37.09 -0-4	58.6 2-4	10.86 -0-3	74.6 2-3
27.0	36.06 .05	32.4 2-2	38.77 +.01	56.3 2-5	37.09 +.05	56.2 2-4	10.85 +.02	72.2 2-3
Nov. 6.0	36.13 .10	30.1 2-4	38.81 .06	52.7 2-6	37.19 .14	53.9 2-2	10.89 .07	69.6 2-7
15.9	36.26 .15	27.6 2-6	38.93 .15	49.1 2-6	37.38 .23	51.8 2-0	10.98 .12	66.8 2-0
25.9	36.43 .20	24.9 2-7	39.11 .22	45.5 2-6	37.65 .32	50.0 1-6	11.13 .17	63.8 2-0
Dec. 5.9	36.65 .24	22.2 2-7	39.36 .28	41.9 2-4	38.01 .39	48.5 1-2	11.32 .22	60.9 2-0
15.9	36.91 .28	19.5 2-6	39.67 .34	38.6 2-2	38.44 .46	47.5 0-8	11.57 .26	57.9 2-0
25.8	37.20 .30	16.8 2-5	40.04 .38	35.6 2-8	38.93 .51	46.9 -0-3	11.85 .29	55.1 2-7
35.8	37.51 +.32	14.4 -2-3	40.45 +.42	33.0 -2-3	39.46 +.54	46.9 +0-2	12.15 +.31	52.5 -2-4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^2 Libræ.		β Bootis.		β Libræ.		μ^1 Bootis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 14 ^m 43	[°] 15 ['] 29	^h 14 ^m 56	[°] 40 ['] 54	^h 15 ^m 9	[°] 8 ['] 53	^h 15 ^m 19	[°] 37 ['] 50
Jan. 0.8	30.88 +.81	3.4 +1.5	54.74 +.83	53.4 -2.8	50.39 +.29	16.0 +1.6	26.58 +.20	39.1 -2.8
10.8	31.20 -.82	4.9 1.6	55.08 -.85	50.9 2.4	50.69 -.80	17.7 1.6	26.89 -.83	36.4 2.5
20.8	31.52 -.82	6.5 1.6	55.44 -.86	48.7 1.9	51.00 -.81	19.3 1.6	27.23 -.84	34.1 2.1
30.8	31.84 -.82	8.1 1.6	55.81 -.87	47.1 1.3	51.31 -.81	20.9 1.6	27.58 -.85	32.3 1.6
Feb. 9.7	32.16 -.81	9.7 1.5	56.17 -.86	46.0 0.8	51.62 -.80	22.3 1.4	27.93 -.86	31.0 1.0
19.7	32.46 -.80	11.2 1.4	56.53 -.84	45.6 -0.2	51.92 -.80	23.6 1.2	28.28 -.84	30.3 -0.4
Mar. 1.7	32.73 -.80	12.6 1.3	56.86 -.82	45.7 +0.4	52.20 -.80	24.7 1.0	28.61 -.82	30.1 +0.2
11.7	32.98 -.80	13.8 1.1	57.16 -.80	46.4 1.0	52.46 -.80	25.6 0.8	28.91 -.80	30.6 0.7
21.6	33.20 -.81	14.8 0.9	57.43 -.80	47.6 1.3	52.70 -.80	26.3 0.6	29.19 -.80	31.6 1.2
31.6	33.39 -.80	15.6 0.8	57.66 -.81	49.3 1.9	52.90 -.80	26.8 0.3	29.43 -.80	33.1 1.7
April 10.6	33.55 -.80	16.3 0.6	57.84 -.80	51.4 2.2	53.08 -.80	27.0 +0.1	29.63 -.80	35.0 2.1
20.5	33.69 -.80	16.8 0.4	57.98 -.80	53.8 2.6	53.24 -.80	27.1 0.0	29.80 -.80	37.2 2.3
30.5	33.79 -.80	17.1 0.3	58.08 -.80	56.4 2.8	53.36 -.80	26.9 -0.2	29.92 -.80	39.7 2.6
May 10.5	33.86 -.80	17.3 +0.1	58.13 +.08	59.1 2.7	53.46 -.80	26.7 0.3	30.01 -.80	42.3 2.6
20.5	33.91 +.08	17.4 0.0	58.15 -0.1	61.7 2.6	53.53 -.80	26.3 0.4	30.05 +.03	44.9 2.6
30.4	33.93 -.80	17.4 -0.1	58.12 -.80	64.3 2.6	53.57 +.02	25.9 0.5	30.05 -0.2	47.5 2.6
June 9.4	33.91 -0.2	17.2 0.2	58.06 -.80	66.7 2.3	53.58 -0.1	25.4 0.5	30.01 -.80	50.0 2.4
19.4	33.88 -.80	17.0 0.2	57.95 -.80	68.9 2.0	53.56 -.80	24.9 0.5	29.94 -.80	52.3 2.1
29.4	33.81 -.80	16.8 0.3	57.82 -.80	70.7 1.7	53.51 -.80	24.3 0.5	29.84 -.80	54.3 1.9
July 9.3	33.72 -.80	16.4 0.4	57.66 -.80	72.3 1.3	53.43 -.80	23.8 0.5	29.70 -.80	56.0 1.6
19.3	33.61 -.80	16.0 0.4	57.47 -.80	73.4 0.9	53.33 -.80	23.3 0.5	29.53 -.80	57.3 1.2
29.3	33.48 -.80	15.5 0.5	57.26 -.80	74.1 0.5	53.21 -.80	22.8 0.5	29.34 -.80	58.3 0.8
Aug. 8.2	33.33 -.80	15.0 0.5	57.04 -.80	74.4 +0.1	53.07 -.80	22.3 0.5	29.13 -.80	58.8 +0.3
18.2	33.18 -.80	14.5 0.6	56.81 -.80	74.3 -0.4	52.92 -.80	21.8 0.4	28.91 -.80	59.0 -0.1
28.2	33.02 -.80	13.9 0.6	56.58 -.80	73.7 0.8	52.76 -.80	21.4 0.4	28.68 -.80	58.7 0.5
Sept. 7.2	32.88 -.80	13.3 0.6	56.36 -.80	72.7 1.2	52.61 -.80	21.1 0.3	28.46 -.80	57.9 1.0
17.1	32.74 -.80	12.8 0.6	56.15 -.80	71.2 1.6	52.46 -.80	20.8 0.3	28.25 -.80	56.8 1.4
27.1	32.64 -.80	12.3 0.4	55.97 -.80	69.4 2.0	52.34 -.80	20.7 -0.1	28.06 -.80	55.2 1.8
Oct. 7.1	32.56 -.80	12.0 0.3	55.83 -.80	67.2 2.4	52.24 -.80	20.7 +0.1	27.89 -.80	53.2 2.1
17.1	32.52 -0.2	11.8 -0.1	55.72 -.80	64.6 2.7	52.18 -0.4	20.8 0.3	27.78 -.80	50.9 2.5
27.0	32.53 +.03	11.8 +0.1	55.67 -0.3	61.7 2.0	52.16 +0.1	21.2 0.4	27.70 -0.6	48.3 2.8
Nov. 6.0	32.50 -.80	11.9 0.3	55.67 +0.8	58.6 2.2	52.19 -.80	21.7 0.5	27.68 +0.1	45.3 2.0
16.0	32.70 -.80	12.4 0.5	55.74 -.80	55.3 2.2	52.27 -.80	22.5 0.0	27.72 -.80	42.2 2.2
25.9	32.86 -.80	13.0 0.8	55.86 -.80	51.9 2.4	52.40 -.80	23.5 1.1	27.81 -.80	38.9 2.3
Dec. 5.9	33.07 -.80	13.9 1.0	56.04 -.80	48.5 2.4	52.58 -.80	24.7 1.3	27.96 -.80	35.6 2.3
15.9	33.32 -.80	15.1 1.2	56.28 -.80	45.1 2.2	52.80 -.80	26.0 1.4	28.17 -.80	32.3 2.2
25.9	33.60 -.80	16.4 1.4	56.56 -.80	42.0 2.0	53.06 -.80	27.5 1.5	28.42 -.80	29.1 2.1
35.8	33.91 +.82	17.9 +1.6	56.89 +.84	39.2 -2.8	53.34 +.80	29.2 +1.7	28.72 +.31	26.2 -2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Coronæ Borealis.		α Serpentis		ε Serpentis.		ε Coronæ Borealis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 15 29	^m 27° 9'	^h 15 37	^m 6° 50'	^h 15 44	^m 4° 52'	^h 15 52	^m 27° 15'
Jan. 0.0	2.19 +.27	51.4 -2.7	42.07 +.26	51.6 -2.1	10.26 +.26	54.0 -2.1	3.66 +.26	54.1 -2.6
10.8	2.48 .30	48.8 2.4	42.34 .28	49.5 2.0	10.53 .26	51.9 2.0	3.93 .29	51.4 2.6
20.8	2.79 .29	46.5 2.1	42.63 .30	47.5 1.8	10.82 .29	50.0 1.8	4.23 .31	49.0 2.1
30.8	3.19 .29	44.6 1.7	42.94 .30	45.8 1.6	11.12 .30	48.4 1.6	4.54 .32	47.0 1.8
Feb. 9.8	3.44 .28	43.2 1.2	43.24 .30	44.3 1.3	11.42 .30	46.9 1.3	4.86 .23	45.5 1.3
19.7	3.76 .31	42.3 0.7	43.54 .29	43.2 1.0	11.72 .29	45.7 1.0	5.18 .31	44.4 0.6
Mar. 1.7	4.06 .29	41.8 -0.1	43.82 .28	42.4 0.6	12.00 .28	44.9 0.7	5.49 .30	43.8 -0.3
11.7	4.34 .27	42.0 +0.4	44.09 .28	41.9 -0.3	12.27 .26	44.4 -0.3	5.78 .28	43.8 +0.2
21.7	4.60 .24	42.6 0.8	44.34 .24	41.9 +0.1	12.52 .24	44.3 0.0	6.05 .26	44.3 0.7
31.6	4.83 .21	43.6 1.3	44.56 .21	42.2 0.4	12.75 .21	44.5 +0.4	6.30 .23	45.3 1.2
April 10.6	5.03 .18	45.1 1.6	44.76 .18	42.7 0.7	12.95 .19	45.0 0.6	6.52 .20	46.7 1.4
20.6	5.20 .15	46.9 1.9	44.93 .16	43.6 0.9	13.13 .16	45.7 0.6	6.71 .17	48.4 1.9
30.5	5.33 .11	48.9 2.1	45.07 .13	44.6 1.1	13.28 .14	46.6 1.0	6.86 .14	50.5 2.1
May 10.5	5.43 .08	51.1 2.2	45.19 .10	45.8 1.2	13.40 .11	47.8 1.2	6.98 .11	52.7 2.2
20.5	5.49 .06	53.4 2.2	45.27 .07	47.1 1.2	13.49 .08	49.0 1.2	7.07 .07	55.0 2.2
30.5	5.52 +.01	55.6 2.2	45.33 .04	48.5 1.4	13.55 .05	50.3 1.2	7.12 +.02	57.3 2.2
June 9.4	5.51 -0.2	57.8 2.1	45.35 +.01	49.8 1.2	13.59 +.02	51.5 1.2	7.14 .00	59.6 2.2
19.4	5.48 .06	59.8 1.9	45.34 -0.2	51.2 1.2	13.59 -0.1	52.8 1.2	7.12 -0.4	61.8 2.1
29.4	5.40 .09	61.7 1.7	45.31 .06	52.4 1.2	13.56 .05	54.0 1.1	7.06 .07	63.8 1.9
July 9.4	5.30 .12	63.3 1.8	45.24 .08	53.5 1.0	13.49 .08	55.0 1.0	6.97 .10	65.5 1.8
19.3	5.17 .14	64.6 1.2	45.15 .11	54.5 0.9	13.41 .10	56.0 0.8	6.85 .13	67.0 1.2
29.3	5.02 .16	65.6 0.8	45.03 .13	55.3 0.7	13.29 .12	56.7 0.7	6.71 .16	68.2 1.0
Aug. 8.3	4.85 .18	66.3 0.4	44.89 .15	55.9 0.6	13.15 .15	57.4 0.6	6.54 .18	69.0 0.7
18.2	4.66 .19	66.6 +0.1	44.73 .16	56.4 0.3	13.00 .16	57.8 0.4	6.35 .20	69.5 +0.2
28.2	4.47 .19	66.5 -0.2	44.57 .17	56.6 +0.1	12.84 .17	58.1 +0.2	6.15 .20	69.6 -0.1
Sept. 7.2	4.27 .19	66.1 0.6	44.40 .16	56.6 -0.1	12.67 .17	58.2 0.0	5.94 .20	69.4 0.4
17.2	4.09 .18	65.3 1.0	44.24 .15	56.4 0.2	12.51 .16	58.1 -0.2	5.75 .19	68.8 0.2
27.1	3.92 .15	64.2 1.2	44.10 .13	56.0 0.2	12.36 .14	57.7 0.2	5.56 .17	67.7 1.2
Oct. 7.1	3.78 .12	62.6 1.7	43.97 .11	55.4 0.2	12.23 .11	57.2 0.7	5.40 .14	66.4 1.6
17.1	3.67 .09	60.8 2.0	43.88 .07	54.4 1.0	12.14 .07	56.4 0.9	5.28 .11	64.6 1.9
27.1	3.61 -0.4	58.6 2.2	43.83 -0.3	53.3 1.2	12.09 -0.3	55.3 1.1	5.19 .07	62.6 2.2
Nov. 6.0	3.59 +.01	56.1 2.6	43.83 +.02	51.9 1.2	12.08 +.01	54.0 1.4	5.15 -0.2	60.2 2.2
16.0	3.63 .06	53.5 2.2	43.87 .07	50.2 1.7	12.11 .06	52.5 1.6	5.16 +.04	57.6 2.7
26.0	3.72 .12	50.6 2.9	43.97 .12	48.4 1.9	12.20 .11	50.8 1.6	5.22 .08	54.7 2.9
Dec. 5.9	3.86 .17	47.6 2.0	44.11 .16	46.4 2.1	12.34 .16	48.9 1.9	5.34 .14	51.8 2.9
15.9	4.05 .21	44.6 2.0	44.30 .21	44.3 2.2	12.52 .20	46.9 2.0	5.50 .19	48.8 2.0
25.9	4.20 .25	41.7 2.2	44.52 .24	42.1 2.2	12.74 .24	44.8 2.1	5.72 .22	45.8 2.2
35.9	4.56 +.29	38.9 -2.6	44.78 +.27	40.0 -2.1	13.00 +.27	42.8 -2.0	5.97 +.26	43.0 -2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Scorpii.		β^1 Scorpii.		δ Ophiuchi.		τ Herculis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 15 52	^m 22 14	^h 15 57	^m 19 26	^h 16 7	^m 3 20	^h 16 15	^m 46 37
Jan. 0.9	27.42 +.28	13.6 +0.8	41.37 +.28	8.1 +0.9	21.59 +.25	50.5 +1.6	42.62 +.26	52.1 -2.2
10.9	27.71 -.30	14.5 1.0	41.65 -.30	9.1 1.0	21.85 -.27	52.1 1.6	42.90 -.31	49.0 2.9
20.8	28.03 -.32	15.5 1.1	41.96 -.31	10.2 1.1	22.13 -.29	53.8 1.6	43.23 -.34	46.3 2.6
30.8	28.35 -.33	16.6 1.1	42.28 -.32	11.3 1.1	22.42 -.30	55.3 1.4	43.58 -.36	44.0 2.0
Feb. 0.8	28.63 -.33	17.7 1.1	42.60 -.32	12.4 1.1	22.72 -.30	56.6 1.3	43.95 -.38	42.3 1.4
10.8	29.00 -.32	18.8 1.1	42.92 -.31	13.5 1.1	23.02 -.29	57.8 1.0	44.33 -.38	41.2 0.8
Mar. 1.7	29.31 -.31	19.9 1.1	43.23 -.30	14.6 1.0	23.31 -.29	58.7 0.8	44.71 -.37	40.7 -0.2
11.7	29.61 -.29	20.9 1.0	43.52 -.28	15.5 0.9	23.59 -.27	59.3 0.6	45.08 -.36	40.8 +0.6
21.7	29.89 -.27	21.9 0.9	43.79 -.27	16.3 0.8	23.86 -.25	59.7 +0.2	45.43 -.33	41.6 1.0
31.6	30.15 -.24	22.7 0.8	44.05 -.24	16.0 0.6	24.10 -.23	59.8 0.0	45.74 -.30	42.9 1.6
April 10.6	30.38 -.22	23.4 0.6	44.28 -.22	17.6 0.5	24.32 -.21	59.6 -0.3	46.03 -.26	44.8 2.1
20.6	30.58 -.19	24.0 0.6	44.49 -.19	18.0 0.4	24.52 -.19	59.2 0.5	46.27 -.22	47.0 2.4
30.6	30.76 -.17	24.5 0.5	44.67 -.17	18.3 0.3	24.70 -.16	58.6 0.6	46.47 -.18	49.6 2.7
May 10.5	30.91 -.13	24.9 0.4	44.82 -.14	18.6 0.2	24.84 -.13	57.9 0.8	46.62 -.13	52.5 2.9
20.5	31.03 -.10	25.2 0.3	44.94 -.11	18.7 0.1	24.96 -.10	57.1 0.8	46.73 -.08	55.5 2.0
30.5	31.12 -.07	25.5 0.2	45.03 -.07	18.8 +0.1	25.05 -.07	56.3 0.9	46.78 +.08	58.5 2.0
June 9.5	31.17 +.04	25.7 0.2	45.09 -.04	18.8 0.0	25.11 -.04	55.4 0.9	46.79 -.02	61.4 2.9
19.4	31.19 -.00	25.8 0.1	45.11 +.01	18.8 0.0	25.13 +.01	54.5 0.9	46.75 -.07	64.2 2.7
29.4	31.17 -.04	25.9 +0.1	45.10 -.03	18.8 0.0	25.12 -.02	53.6 0.8	46.66 -.11	66.8 2.4
July 9.4	31.12 -.07	25.9 0.0	45.05 -.06	18.7 -0.1	25.08 -.06	52.8 0.8	46.52 -.13	69.1 2.1
19.3	31.04 -.10	25.9 -0.1	44.98 -.10	18.5 0.2	25.01 -.09	52.1 0.7	46.35 -.19	71.1 1.8
29.3	30.92 -.13	25.8 0.2	44.86 -.12	18.3 0.2	24.91 -.12	51.5 0.6	46.13 -.23	72.6 1.3
Aug. 8.3	30.78 -.15	25.6 0.3	44.73 -.15	18.1 0.3	24.78 -.14	50.9 0.5	45.89 -.26	73.7 0.9
18.3	30.62 -.17	25.3 0.3	44.57 -.17	17.8 0.3	24.63 -.16	50.5 0.4	45.62 -.28	74.4 +0.4
28.2	30.44 -.18	24.9 0.4	44.40 -.17	17.5 0.4	24.47 -.17	50.2 0.3	45.33 -.29	74.6 0.0
Sept. 7.2	30.27 -.18	24.5 0.5	44.22 -.18	17.1 0.4	24.30 -.17	50.0 -0.1	45.04 -.29	74.3 -0.5
17.2	30.09 -.17	24.0 0.5	44.05 -.17	16.7 0.4	24.13 -.16	49.9 0.0	44.75 -.28	73.5 1.0
27.2	29.93 -.15	23.5 0.5	43.89 -.16	16.3 0.4	23.97 -.15	49.9 +0.2	44.47 -.26	72.3 1.5
Oct. 7.1	29.80 -.12	23.0 0.5	43.75 -.12	15.9 0.4	23.83 -.12	50.2 0.3	44.22 -.23	70.6 1.9
17.1	29.69 -.06	22.5 0.4	43.65 -.08	15.6 0.3	23.72 -.09	50.6 0.5	44.01 -.19	68.5 2.3
27.1	29.64 -.03	22.1 0.3	43.59 -.04	15.3 -0.2	23.65 -.08	51.1 0.7	43.83 -.16	65.9 2.7
Nov. 6.0	29.63 +.02	21.9 0.2	43.57 +.01	15.2 0.0	23.63 -.00	51.9 0.9	43.71 -.09	63.0 2.0
16.0	29.67 -.07	21.7 -0.1	43.61 -.06	15.2 +0.1	23.65 +.07	52.9 1.1	43.66 -.03	59.9 2.3
26.0	29.77 -.12	21.8 +0.1	43.70 -.12	15.4 0.3	23.72 -.10	54.1 1.2	43.66 +.04	56.5 2.5
Dec. 6.0	29.92 -.17	22.0 0.3	43.85 -.17	15.8 0.5	23.84 -.14	55.4 1.4	43.74 -.11	52.9 2.6
15.9	30.12 -.22	22.4 0.5	44.04 -.21	16.4 0.7	24.00 -.19	56.9 1.6	43.87 -.17	49.4 2.5
25.9	30.36 -.26	23.1 0.7	44.27 -.23	17.2 0.9	24.21 -.23	58.6 1.6	44.07 -.23	45.9 2.4
35.9	30.64 +.29	23.9 +0.9	44.54 +.28	18.1 +1.0	24.46 +.26	60.2 +1.6	44.32 +.28	42.6 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (Antares.)		η Draconis.		ζ Ophiuchi.		η Herculis	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 16 ^m 21	[°] 26 ['] 7	^h 16 ^m 22	[°] 61 ['] 48	^h 16 ^m 29	[°] 10 ['] 17	^h 16 ^m 38	[°] 39 ['] 10
Jan. 0.9	14.23 +.27	48.6 +0.4	9.43 +.31	55.8 -2.6	49.13 +.24	32.5 +1.2	18.52 +.22	38.5 -2.2
10.0	14.56 -.29	49.1 0.0	9.77 -.38	52.5 2.0	49.38 -.26	33.8 1.0	18.76 -.26	35.4 2.0
20.8	14.87 -.31	49.8 0.7	10.18 -.44	49.7 2.6	49.66 -.28	35.0 1.3	19.05 -.30	32.7 2.6
30.8	15.19 -.33	50.5 0.8	10.65 -.48	47.4 2.0	49.95 -.30	36.3 1.2	19.36 -.32	30.3 2.1
Feb. 9.8	15.52 -.33	51.4 0.9	11.14 -.51	45.7 1.4	50.25 -.30	37.4 1.1	19.69 -.34	28.4 1.6
19.8	15.85 -.33	52.2 0.9	11.66 -.52	44.6 0.7	50.55 -.30	38.4 0.9	20.03 -.34	27.0 1.1
Mar. 1.7	16.18 -.32	53.1 0.9	12.18 -.51	44.2 -0.1	50.85 -.29	39.3 0.7	20.38 -.34	26.2 -0.5
11.7	16.50 -.31	54.0 0.8	12.69 -.49	44.5 +0.8	51.14 -.28	39.9 0.6	20.71 -.33	26.1 +0.1
21.7	16.80 -.29	54.8 0.8	13.17 -.46	45.4 1.2	51.42 -.27	40.4 0.4	21.03 -.31	26.5 0.7
31.7	17.08 -.27	55.5 0.7	13.61 -.43	46.9 1.8	51.68 -.26	40.6 +0.1	21.34 -.29	27.6 1.3
April 10.6	17.34 -.26	56.2 0.7	14.00 -.36	49.0 2.3	51.92 -.25	40.7 0.0	21.61 -.28	29.1 1.7
20.6	17.58 -.25	56.8 0.6	14.33 -.30	51.5 2.7	52.14 -.21	40.5 -0.3	21.86 -.23	31.1 2.3
30.6	17.79 -.20	57.4 0.5	14.59 -.23	54.3 2.0	52.34 -.19	40.3 0.3	22.07 -.19	33.4 2.8
May 10.5	17.98 -.17	57.9 0.5	14.78 -.18	57.4 2.2	52.51 -.16	39.8 0.4	22.25 -.15	35.0 2.7
20.5	18.13 -.14	58.4 0.4	14.90 +.08	60.7 2.3	52.66 -.13	39.4 0.6	22.38 -.11	38.8 2.8
30.5	18.25 -.10	58.8 0.4	14.94 -.00	63.9 2.2	52.77 -.10	38.8 0.6	22.47 -.07	41.6 2.9
June 9.5	18.33 -.07	59.2 0.4	14.91 -.07	67.1 2.1	52.86 -.06	38.3 0.6	22.52 +.02	44.5 2.8
19.4	18.38 +.02	59.6 0.3	14.80 -.14	70.1 2.0	52.91 +.03	37.7 0.6	22.52 -.02	47.2 2.7
29.4	18.39 -.01	59.9 0.3	14.62 -.21	72.9 2.6	52.92 -.00	37.2 0.6	22.48 -.06	49.8 2.8
July 9.4	18.36 -.05	60.1 0.3	14.38 -.27	75.3 2.3	52.90 -.04	36.7 0.6	22.39 -.10	52.2 2.3
19.4	18.29 -.09	60.3 0.1	14.08 -.33	77.4 1.9	52.84 -.07	36.2 0.6	22.27 -.14	54.2 1.9
29.3	18.19 -.12	60.4 +0.1	13.73 -.37	79.0 1.4	52.75 -.11	35.7 0.4	22.10 -.18	55.9 1.5
Aug. 8.3	18.05 -.15	60.4 -0.1	13.33 -.41	80.2 0.9	52.63 -.13	35.4 0.4	21.91 -.21	57.2 1.1
18.3	17.89 -.17	60.3 0.2	12.91 -.44	80.9 +0.4	52.48 -.15	35.0 0.3	21.68 -.23	58.2 0.7
28.2	17.71 -.19	60.1 0.3	12.46 -.45	81.0 -0.1	52.32 -.17	34.7 0.3	21.44 -.25	58.6 +0.3
Sept. 7.2	17.52 -.19	59.8 0.4	12.00 -.46	80.7 0.6	52.15 -.17	34.5 0.2	21.19 -.28	58.7 -0.3
17.2	17.33 -.18	59.4 0.4	11.55 -.44	79.8 1.1	51.97 -.17	34.3 0.1	20.93 -.29	58.3 0.6
27.2	17.15 -.17	58.9 0.5	11.11 -.41	78.4 1.6	51.80 -.16	34.2 -0.1	20.68 -.34	57.4 1.1
Oct. 7.1	16.99 -.14	58.4 0.6	10.71 -.38	76.5 2.1	51.65 -.13	34.2 0.0	20.45 -.22	56.1 1.3
17.1	16.87 -.11	57.8 0.6	10.35 -.33	74.2 2.6	51.53 -.11	34.3 +0.2	20.25 -.18	54.3 2.0
27.1	16.78 -.06	57.3 0.6	10.06 -.26	71.4 2.9	51.44 -.07	34.5 0.3	20.08 -.14	52.1 2.4
Nov. 6.1	16.74 -.01	56.8 0.4	9.83 -.19	68.3 2.3	51.40 -.02	34.9 0.6	19.97 -.08	49.6 2.7
16.0	16.76 +.04	56.4 0.3	9.69 -.10	64.9 2.5	51.40 +.03	35.4 0.6	19.90 -.04	46.8 2.0
26.0	16.83 -.10	56.1 -0.2	9.63 -.01	61.2 2.7	51.46 -.06	36.1 0.6	19.89 +.02	43.7 2.2
Dec. 6.0	16.95 -.15	56.0 0.0	9.67 +.08	57.5 2.7	51.56 -.13	37.0 0.9	19.94 -.08	40.4 2.3
15.9	17.13 -.20	56.1 +0.2	9.79 -.17	53.7 2.7	51.71 -.17	38.0 1.1	20.05 -.14	37.0 2.4
25.9	17.35 -.24	56.4 0.4	10.01 -.28	50.1 2.6	51.91 -.21	39.1 1.3	20.22 -.19	33.7 2.3
35.9	17.62 +.28	56.8 +0.6	10.31 +.24	46.6 -2.3	52.14 +.25	40.4 +1.3	20.44 +.24	30.4 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		δ Herculis.		α^1 Herculis.		δ Ophiuchi (44).	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h 16 ^m 51	[°] 9 ['] 34	^h 16 ^m 56	[°] 33 ['] 45	^h 17 ^m 8	[°] 14 ['] 32	^h 17 ^m 18	[°] 24 ['] 2
Jan. 0.9	21.13 +30	69.0 -2.2	40.05 +1.9	49.2 -2.1	33.67 +1.8	46.1 -2.4	13.61 +2.22	48.2 +0.2
10.9	21.35 .23	66.9 2.1	40.27 .24	46.2 2.9	33.88 .22	43.8 2.3	13.84 .25	48.5 0.3
20.9	21.60 .26	64.9 1.9	40.53 .27	43.5 2.6	34.11 .25	41.6 2.1	14.10 .27	48.9 0.4
30.8	21.87 .27	63.1 1.7	40.82 .30	41.1 2.2	34.37 .27	39.6 1.8	14.39 .30	49.3 0.4
Feb. 9.8	22.15 .29	61.6 1.4	41.12 .31	39.1 1.7	34.65 .28	38.0 1.6	14.69 .31	49.8 0.5
19.8	22.44 .29	60.3 1.0	41.44 .32	37.7 1.2	34.93 .29	36.6 1.1	15.01 .32	50.3 0.5
Mar. 1.8	22.73 .29	59.5 0.7	41.76 .32	36.7 0.6	35.22 .29	35.7 0.7	15.33 .32	50.7 0.4
11.7	23.01 .28	59.0 -0.3	42.09 .33	36.4 -0.1	35.51 .29	35.2 -0.3	15.64 .32	51.1 0.4
21.7	23.29 .27	58.9 +0.1	42.40 .30	36.6 +0.5	35.80 .28	35.2 +0.2	15.96 .31	51.5 0.3
31.7	23.55 .26	59.3 0.5	42.69 .29	37.4 1.0	36.07 .26	35.6 0.6	16.26 .30	51.8 0.3
April 10.7	23.80 .24	59.9 0.8	42.97 .26	38.7 1.5	36.32 .25	36.4 1.0	16.55 .28	52.0 0.2
20.6	24.02 .23	60.9 1.1	43.22 .24	40.5 1.9	36.56 .23	37.5 1.3	16.83 .27	52.2 0.2
30.6	24.23 .19	62.2 1.4	43.44 .20	42.6 2.3	36.78 .21	39.0 1.6	17.08 .25	52.3 0.1
May 10.6	24.41 .17	63.6 1.6	43.63 .17	45.0 2.5	36.97 .18	40.7 1.8	17.32 .22	52.4 0.1
20.5	24.56 .14	65.2 1.6	43.78 .13	47.6 2.7	37.14 .15	42.5 1.9	17.52 .19	52.5 0.1
30.5	24.68 .10	66.9 1.7	43.89 .09	50.3 2.7	37.27 .12	44.5 2.0	17.70 .16	52.6 0.1
June 9.5	24.77 .07	68.6 1.7	43.97 .06	53.0 2.7	37.37 .08	46.5 2.0	17.84 .12	52.8 0.1
19.5	24.82 +0.4	70.3 1.6	44.00 +0.1	55.7 2.6	37.44 .05	48.4 1.9	17.94 .08	52.9 0.1
29.4	24.84 .00	71.8 1.5	43.99 -.03	58.2 2.4	37.47 +0.01	50.3 1.8	18.00 +0.4	53.0 0.2
July 9.4	24.82 -.04	73.3 1.4	43.94 .07	60.6 2.2	37.45 -.03	52.1 1.7	18.02 .00	53.2 0.2
19.4	24.76 .07	74.6 1.2	43.84 .11	62.7 1.9	37.41 .07	53.6 1.5	18.00 -.04	53.4 0.2
29.4	24.67 .11	75.8 1.0	43.71 .15	64.5 1.6	37.32 .10	55.0 1.2	17.94 .06	53.6 0.2
Aug. 8.3	24.55 .13	76.7 0.8	43.54 .18	65.9 1.2	37.20 .13	56.1 1.0	17.84 .12	53.7 0.1
18.3	24.41 .16	77.4 0.6	43.34 .21	67.0 0.9	37.06 .16	57.0 0.7	17.70 .15	53.8 +0.1
28.3	24.24 .17	77.9 0.4	43.13 .22	67.6 +0.5	36.89 .18	57.6 0.5	17.54 .17	53.8 0.0
Sept. 7.2	24.06 .18	78.1 +0.1	42.89 .24	67.9 0.9	36.70 .19	57.9 +0.2	17.35 .19	53.8 -0.1
17.2	23.87 .18	78.1 -0.1	42.65 .24	67.7 -0.4	36.51 .19	58.0 -0.1	17.16 .19	53.7 0.1
27.2	23.69 .17	77.8 0.4	42.42 .22	67.1 0.8	36.32 .19	57.7 0.4	16.96 .19	53.5 0.2
Oct. 7.2	23.52 .16	77.3 0.7	42.20 .21	66.0 1.2	36.14 .17	57.1 0.7	16.78 .17	53.3 0.3
17.1	23.37 .13	76.5 0.9	42.00 .18	64.6 1.7	35.98 .15	56.2 1.0	16.62 .14	53.0 0.3
27.1	23.26 .09	75.5 1.2	41.84 .14	62.7 2.0	35.85 .11	55.1 1.3	16.49 .11	52.7 0.3
Nov. 6.1	23.19 .06	74.1 1.4	41.72 .10	60.5 2.4	35.75 .07	53.6 1.6	16.40 .06	52.5 0.3
16.1	23.16 -.01	72.6 1.7	41.65 -.06	57.9 2.7	35.70 -.02	51.9 1.9	16.36 -.02	52.2 0.2
26.0	23.18 +.04	70.8 1.9	41.63 +0.1	55.1 2.9	35.70 +0.2	49.9 2.1	16.37 +0.4	52.0 -0.1
Dec. 6.0	23.24 .09	69.8 2.0	41.66 .06	52.1 3.1	35.75 .07	47.7 2.2	16.44 .09	51.9 0.0
16.0	23.36 .14	66.7 2.1	41.76 .12	48.9 3.2	35.84 .12	45.4 2.3	16.55 .14	51.9 +0.1
25.9	23.52 .18	64.5 2.2	41.90 .17	45.7 3.2	35.98 .16	43.0 2.4	16.72 .19	52.1 0.2
35.9	23.72 +.21	62.4 -2.1	42.09 +.21	42.6 -2.0	36.16 +.20	40.6 -2.4	16.93 +.23	52.3 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Draconis.		α Ophiuchi.		μ Herculis.		γ Draconis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 17 ^m 27	[°] 52 ['] 23	^h 17 ^m 28	[°] 12 ['] 39	^h 17 ^m 41	[°] 24 ['] 47	^h 17 ^m 53	[°] 51 ['] 30
Jan. 1.0	23.40 +.17	66.9 -3.6	44.30 +.17	41.0 -2.3	13.73 +.15	67.0 -2.9	29.05 +.12	25.9 -2.3
10.9	23.61 -.23	63.4 3.3	44.49 -.20	38.8 3.2	13.90 -.19	64.2 3.9	29.21 -.19	22.4 3.4
20.9	23.87 -.29	60.2 3.0	44.71 -.22	36.7 3.0	14.11 -.23	61.5 3.6	29.44 -.25	19.1 3.1
30.9	24.18 -.33	57.4 2.6	44.96 -.26	34.8 1.8	14.35 -.26	59.0 3.3	29.71 -.30	16.1 2.8
Feb. 9.8	24.53 -.37	55.0 2.1	45.22 -.27	33.2 1.6	14.61 -.28	56.9 1.9	30.03 -.34	13.6 2.3
19.8	24.91 -.39	53.2 1.6	45.50 -.28	31.8 1.1	14.90 -.29	55.3 1.4	30.39 -.37	11.5 1.8
Mar. 1.8	25.31 -.41	52.0 0.9	45.78 -.29	30.9 0.7	15.20 -.30	54.1 0.9	30.77 -.39	10.1 1.2
11.8	25.72 -.41	51.5 -0.3	46.07 -.29	30.4 -0.3	15.50 -.31	53.4 -0.4	31.16 -.40	9.2 -0.5
21.7	26.13 -.40	51.6 +0.4	46.35 -.28	30.2 +0.1	15.80 -.30	53.3 +0.2	31.56 -.40	9.1 +0.2
31.7	26.52 -.38	52.3 1.1	46.63 -.27	30.6 0.8	16.10 -.29	53.7 0.7	31.96 -.39	9.5 0.6
April 10.7	26.89 -.36	53.7 1.6	46.89 -.26	31.3 0.9	16.38 -.28	54.6 1.2	32.34 -.37	10.6 1.4
20.7	27.23 -.32	55.6 2.1	47.15 -.24	32.3 1.2	16.65 -.26	56.0 1.6	32.69 -.34	12.3 1.9
30.6	27.53 -.28	57.9 2.6	47.38 -.22	33.7 1.6	16.90 -.24	57.8 1.9	33.02 -.30	14.4 2.4
May 10.6	27.79 -.26	60.6 2.9	47.59 -.20	35.3 1.7	17.12 -.21	59.9 2.2	33.30 -.26	17.0 2.7
20.6	28.00 -.18	63.6 3.1	47.77 -.17	37.1 1.6	17.32 -.18	62.2 2.4	33.54 -.21	19.9 3.0
30.5	28.15 -.12	66.8 3.3	47.92 -.14	39.0 1.9	17.48 -.14	64.7 2.6	33.73 -.16	23.0 3.2
June 9.5	28.25 +.07	70.0 3.2	48.04 -.10	40.9 1.6	17.60 -.10	67.3 2.6	33.86 -.10	26.2 3.3
19.5	28.29 -.00	73.3 3.3	48.13 -.07	42.8 1.9	17.69 -.08	69.9 2.9	33.94 +.05	29.5 3.2
29.5	28.26 -.06	76.4 3.0	48.18 +.08	44.7 1.8	17.73 +.02	72.4 2.6	33.95 -.01	32.7 3.1
July 9.4	28.17 -.11	79.3 2.8	48.19 -.01	46.4 1.7	17.73 -.02	74.8 2.3	33.91 -.07	35.8 2.6
19.4	28.03 -.17	81.9 2.3	48.16 -.08	48.0 1.9	17.68 -.06	77.0 2.1	33.80 -.13	38.6 2.7
29.4	27.84 -.22	84.3 2.1	48.09 -.09	49.4 1.3	17.60 -.10	78.9 1.6	33.65 -.19	41.2 2.4
Aug. 8.4	27.59 -.26	86.2 1.7	47.98 -.12	50.5 1.0	17.47 -.14	80.6 1.5	33.43 -.24	43.4 2.0
18.3	27.31 -.30	87.7 1.3	47.85 -.16	51.5 0.9	17.32 -.17	81.9 1.2	33.18 -.28	45.2 1.6
28.3	26.99 -.32	88.8 0.8	47.69 -.17	52.1 0.6	17.13 -.20	82.9 0.8	32.88 -.31	46.6 1.2
Sept. 7.3	26.65 -.26	89.4 +0.3	47.51 -.19	52.6 +0.3	16.92 -.22	83.5 +0.4	32.55 -.34	47.5 0.7
17.2	26.29 -.20	89.4 -0.2	47.31 -.19	52.7 0.0	16.70 -.22	83.7 0.0	32.21 -.36	47.9 +0.2
27.2	25.94 -.26	89.0 0.7	47.12 -.19	52.5 -0.2	16.48 -.22	83.5 -0.4	31.86 -.36	47.8 -0.3
Oct. 7.2	25.59 -.23	88.1 1.3	46.94 -.18	52.1 0.6	16.25 -.21	83.0 0.6	31.51 -.34	47.2 0.9
17.2	25.27 -.20	86.6 1.7	46.77 -.18	51.3 0.9	16.05 -.19	82.0 1.2	31.18 -.31	46.1 1.4
27.1	24.99 -.26	84.7 2.3	46.63 -.12	50.3 1.3	15.87 -.16	80.6 1.6	30.88 -.28	44.5 1.8
Nov. 6.1	24.75 -.21	82.3 2.8	46.52 -.08	49.0 1.4	15.73 -.12	78.9 1.9	30.62 -.22	42.5 2.3
16.1	24.56 -.15	79.6 2.9	46.46 -.04	47.4 1.7	15.63 -.08	76.8 2.2	30.42 -.18	39.9 2.7
26.1	24.45 -.08	76.5 3.2	46.44 +.01	45.6 1.9	15.58 -.08	74.4 2.6	30.27 -.12	37.0 3.0
Dec. 6.0	24.40 -.06	73.1 3.3	46.47 -.05	43.6 2.1	15.57 +.02	71.7 2.7	30.18 -.06	33.6 2.3
16.0	24.42 +.06	69.5 3.8	46.55 -.10	41.4 2.9	15.63 -.07	68.9 2.9	30.17 +.02	30.4 2.5
26.0	24.51 -.13	65.9 3.6	46.67 -.14	39.2 2.3	15.72 -.12	66.0 2.9	30.22 -.09	26.9 2.6
35.9	24.67 +.20	62.4 -2.3	46.83 +.18	36.9 -2.3	15.86 +.16	63.0 -2.6	30.34 +.12	23.3 -2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^s Sagittarii.		μ^1 Sagittarii.		η Serpentis.		1 Aquilæ. (3 H. Scuti Sob.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 17 57	^m 30 25	^h 18 5	^m 21 5	^h 18 14	^m 2 55	^h 18 27	^m 8 19
Jan. 1.0	14.34 +.18	10.7 -0.3	47.12 +.16	16.9 +0.3	24.28 +.14	42.7 +1.3	56.72 +.13	56.0 +0.9
10.9	14.55 .23	10.5 0.3	47.30 .20	17.1 0.3	24.44 .17	44.0 1.3	56.86 .16	56.9 0.9
20.9	14.79 .26	10.2 0.3	47.52 .23	17.4 0.3	24.62 .20	45.3 1.3	57.04 .20	57.9 0.9
30.9	15.06 .28	10.1 0.1	47.76 .26	17.6 0.3	24.84 .23	46.5 1.1	57.25 .22	58.7 0.8
Feb. 9.0	15.36 .30	10.0 -0.1	48.03 .28	17.9 0.2	25.08 .25	47.5 1.0	57.49 .24	59.5 0.7
19.8	15.67 .32	10.0 0.0	48.32 .29	18.1 0.2	25.33 .26	48.4 0.8	57.74 .26	60.1 0.6
Mar. 1.8	16.00 .33	10.0 0.0	48.62 .30	18.3 0.1	25.60 .27	49.0 0.8	58.01 .27	60.5 0.6
11.8	16.33 .33	10.0 0.0	48.92 .31	18.4 +0.1	25.88 .28	49.4 +0.2	58.29 .28	60.7 +0.1
21.8	16.66 .33	10.1 +0.1	49.23 .31	18.4 0.0	26.16 .28	49.5 -0.1	58.57 .29	60.7 -0.1
31.7	16.99 .33	10.1 0.1	49.53 .30	18.3 -0.1	26.45 .28	49.3 0.3	58.86 .29	60.5 0.3
April 10.7	17.31 .32	10.2 0.1	49.83 .30	18.1 0.2	26.72 .28	48.9 0.4	59.15 .28	60.1 0.5
20.7	17.63 .30	10.3 0.1	50.13 .29	17.9 0.3	27.00 .27	48.2 0.6	59.43 .26	59.4 0.7
30.6	17.92 .29	10.4 0.1	50.41 .27	17.6 0.3	27.26 .25	47.3 1.0	59.70 .26	58.7 0.8
May 10.6	18.20 .28	10.5 0.2	50.67 .26	17.3 0.3	27.50 .23	46.3 1.1	59.96 .25	57.8 0.9
20.6	18.45 .24	10.7 0.2	50.91 .23	17.0 0.3	27.72 .21	45.1 1.3	60.20 .23	56.8 1.0
30.6	18.67 .21	11.0 0.3	51.12 .20	16.7 0.3	27.92 .19	43.9 1.3	60.41 .20	55.8 1.0
June 9.5	18.86 .17	11.4 0.4	51.31 .17	16.5 0.3	28.09 .16	42.6 1.3	60.60 .17	54.8 1.0
19.5	19.01 .13	11.8 0.4	51.45 .13	16.3 0.2	28.23 .12	41.4 1.3	60.75 .14	53.8 1.0
29.5	19.12 .08	12.2 0.5	51.56 .09	16.2 -0.1	28.33 .08	40.2 1.1	60.87 .10	52.8 0.9
July 9.5	19.18 +.04	12.7 0.5	51.62 +.04	16.2 0.0	28.39 +.04	39.2 1.0	60.95 .06	52.0 0.8
19.4	19.19 -0.1	13.3 0.5	51.64 .00	16.2 0.0	28.41 .00	38.2 0.9	60.98 +0.1	51.3 0.7
29.4	19.16 .06	13.8 0.5	51.62 -0.0	16.2 0.0	28.39 -0.4	37.3 0.8	60.98 -0.3	50.7 0.6
Aug. 8.4	19.08 .10	14.3 0.5	51.55 .09	16.3 +0.1	28.32 .06	36.6 0.6	60.93 .07	50.2 0.4
18.3	18.96 .14	14.7 0.4	51.45 .12	16.5 0.1	28.22 .12	36.1 0.5	60.84 .11	49.9 0.3
28.3	18.80 .17	15.1 0.3	51.31 .13	16.6 0.1	28.09 .14	35.7 0.3	60.71 .14	49.6 0.3
Sept. 7.3	18.61 .19	15.4 0.2	51.14 .18	16.7 0.1	27.94 .17	35.4 0.3	60.56 .16	49.5 -0.1
17.3	18.41 .21	15.6 +0.1	50.96 .19	16.8 +0.1	27.76 .18	35.3 -0.1	60.39 .18	49.4 0.0
27.2	18.20 .21	15.6 0.0	50.76 .19	16.9 0.0	27.58 .18	35.3 +0.1	60.21 .18	49.5 +0.1
Oct. 7.2	18.00 .20	15.5 -0.2	50.57 .18	16.9 0.0	27.39 .18	35.5 0.3	60.03 .18	49.6 0.2
17.2	17.81 .18	15.2 0.3	50.40 .17	16.8 0.0	27.22 .16	35.8 0.4	59.86 .17	49.9 0.3
27.2	17.65 .14	14.9 0.4	50.24 .14	16.8 0.0	27.07 .14	36.3 0.6	59.70 .14	50.2 0.4
Nov. 6.1	17.52 .10	14.4 0.5	50.12 .10	16.7 0.0	26.94 .10	36.9 0.7	59.57 .11	50.6 0.5
16.1	17.44 -0.0	14.0 0.5	50.04 .06	16.7 0.0	26.86 .07	37.7 0.9	59.48 .07	51.2 0.6
26.1	17.41 .09	13.4 0.5	50.01 -0.1	16.7 0.0	26.81 -0.2	38.6 1.0	59.43 -0.8	51.8 0.7
Dec. 6.0	17.44 +0.6	12.9 0.5	50.02 +0.4	16.7 0.0	26.81 +0.2	39.7 1.1	59.42 +0.1	52.5 0.6
16.0	17.52 .10	12.5 0.4	50.00 .09	16.8 +0.1	26.86 .07	40.8 1.2	59.45 .06	53.3 0.9
26.0	17.65 .16	12.1 0.4	50.20 .13	17.0 0.3	26.95 .11	42.1 1.3	59.53 .10	54.3 0.9
36.0	17.82 +.20	11.7 -0.3	50.36 +.17	17.2 +0.3	27.08 +.15	43.5 +1.4	59.65 +.14	55.2 +1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Lyrae. (Vega.)		β Lyrae.		σ Sagittarii.		ζ Aquilae.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 18 ^m 32	[°] 38 ['] 39	^h 18 ^m 45	[°] 33 ['] 12	^h 18 ^m 46	[°] 26 ['] 27	^h 18 ^m 59	[°] 13 ['] 40
Jan. 1.0	24.44 +.08	50.1 -2.2	8.62 +.08	44.0 -2.0	59.45 +.12	23.1 -0.3	16.40 +.06	13.8 -2.1
11.0	24.55 .13	46.9 2.1	8.72 .12	41.0 2.9	59.60 .16	22.8 0.3	16.50 .12	11.7 2.0
20.9	24.71 .18	43.8 2.0	8.86 .16	38.1 2.8	59.78 .20	22.5 0.2	16.64 .16	9.7 2.0
30.9	24.91 .22	41.0 2.7	9.04 .20	35.4 2.6	60.00 .23	22.3 0.2	16.81 .18	7.8 1.8
Feb. 9.9	25.16 .26	38.5 2.3	9.26 .22	33.0 2.3	60.24 .26	22.1 0.3	17.00 .21	6.1 1.6
19.9	25.43 .28	36.3 1.9	9.52 .26	30.9 1.8	60.51 .28	21.8 0.3	17.23 .22	4.6 1.3
Mar. 1.8	25.72 .31	34.7 1.4	9.79 .28	29.3 1.3	60.80 .30	21.5 0.3	17.47 .25	3.5 0.9
11.8	26.04 .32	33.6 0.8	10.08 .30	28.2 0.8	61.11 .31	21.2 0.3	17.73 .27	2.8 0.5
21.8	26.37 .33	33.2 -0.2	10.39 .31	27.7 -0.3	61.42 .32	20.8 0.4	18.01 .28	2.5 -0.1
31.8	26.70 .33	33.3 +0.4	10.71 .31	27.7 +0.3	61.74 .32	20.4 0.4	18.29 .28	2.7 +0.3
April 10.7	27.03 .32	34.0 1.0	11.02 .31	28.3 0.0	62.06 .32	20.0 0.4	18.57 .28	3.2 0.7
20.7	27.35 .31	35.2 1.5	11.33 .30	29.4 1.4	62.37 .31	19.6 0.4	18.86 .28	4.2 1.1
30.7	27.65 .29	37.0 2.0	11.62 .29	31.0 1.8	62.68 .31	19.2 0.4	19.13 .27	5.4 1.4
May 10.6	27.93 .27	39.1 2.4	11.90 .27	33.1 2.2	62.98 .29	18.8 0.4	19.40 .26	7.0 1.7
20.6	28.19 .24	41.7 2.7	12.16 .24	35.4 2.5	63.26 .27	18.5 0.3	19.65 .24	8.9 1.9
30.6	28.40 .20	44.5 2.9	12.38 .21	38.0 2.7	63.52 .24	18.3 0.2	19.88 .21	10.9 2.1
June 9.6	28.58 .16	47.4 2.0	12.57 .17	40.9 2.9	63.75 .21	18.1 -0.1	20.07 .18	13.0 2.1
19.5	28.72 .11	50.5 2.1	12.72 .13	43.7 2.9	63.94 .17	18.1 0.0	20.24 .13	15.2 2.2
29.5	28.80 .06	53.5 2.0	12.82 .08	46.6 2.9	64.09 .13	18.2 +0.1	20.37 .11	17.4 2.1
July 9.5	28.84 +.01	56.5 2.9	12.88 +.02	49.5 2.8	64.20 .09	18.3 0.2	20.46 .07	19.4 2.0
19.5	28.82 -0.04	59.3 2.7	12.89 -0.02	52.2 2.6	64.26 +.04	18.6 0.3	20.51 +.02	21.4 1.8
29.4	28.76 .09	61.9 2.5	12.85 .06	54.7 2.4	64.27 -0.01	19.0 0.4	20.51 -0.02	23.2 1.7
Aug. 8.4	28.65 .13	64.3 2.2	12.76 .11	56.9 2.1	64.24 .06	19.4 0.4	20.47 .06	24.8 1.3
18.4	28.49 .18	66.2 1.8	12.63 .15	58.9 1.8	64.16 .10	19.8 0.4	20.39 .10	26.1 1.2
28.3	28.29 .21	67.9 1.4	12.47 .18	60.5 1.4	64.04 .14	20.3 0.4	20.27 .13	27.2 1.0
Sept. 7.3	28.07 .24	69.1 1.0	12.27 .21	61.8 1.0	63.89 .17	20.7 0.4	20.13 .16	28.1 0.7
17.3	27.82 .26	69.9 0.6	12.04 .23	62.6 0.0	63.71 .19	21.1 0.3	19.95 .18	28.7 0.4
27.3	27.56 .26	70.3 +0.1	11.81 .24	63.0 +0.3	63.51 .20	21.3 0.2	19.76 .19	29.0 +0.1
Oct. 7.2	27.29 .26	70.2 -0.3	11.56 .24	63.1 -0.2	63.31 .20	21.5 +0.1	19.57 .20	28.9 -0.2
17.2	27.03 .23	69.6 0.8	11.33 .23	62.6 0.7	63.12 .19	21.6 0.0	19.38 .18	28.6 0.3
27.2	26.80 .22	68.6 1.3	11.11 .21	61.7 1.1	62.94 .16	21.6 0.0	19.20 .17	28.0 0.3
Nov. 6.2	26.58 .19	67.1 1.7	10.91 .18	60.4 1.5	62.79 .13	21.5 -0.1	19.05 .14	27.1 1.0
16.1	26.41 .15	65.2 2.1	10.75 .14	58.7 1.9	62.63 .09	21.3 0.2	18.92 .11	25.9 1.3
26.1	26.23 .11	62.8 2.5	10.62 .10	56.6 2.3	62.61 -0.05	21.1 0.2	18.83 .07	24.5 1.5
Dec. 6.1	26.20 -0.06	60.2 2.8	10.54 -0.05	54.2 2.6	62.59 .00	20.9 0.3	18.78 -0.02	22.8 1.5
16.0	26.17 .00	57.3 2.0	10.52 .00	51.5 2.8	62.61 +.05	20.6 0.3	18.76 +.01	21.0 1.9
26.0	26.20 +.03	54.2 2.1	10.54 +.05	48.6 2.9	62.68 .10	20.3 0.3	18.80 .05	18.9 2.1
36.0	26.27 +.10	51.0 -2.2	10.61 +.09	45.6 -2.9	62.80 +.14	20.1 -0.3	18.87 +.09	16.8 -2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Sagittarii.		δ Aquilæ.		α Aquilæ.		γ Aquilæ.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 19 ^m 9	[°] 19 ['] 10	^h 19 ^m 18	[°] 2 ['] 51	^h 19 ^m 29	[°] 7 ['] 16	^h 19 ^m 39	[°] 10 ['] 17
Jan. 1.0	49.64 +09	66.1 +0.1	46.15 +07	15.2 -1.4	42.70 +07	67.4 +0.8	54.88 +04	37.4 -1.8
11.0	49.75 -13	66.2 0.1	46.23 -11	13.8 1.4	42.78 -10	68.2 0.8	54.94 -08	35.6 1.8
21.0	49.90 -17	66.3 +0.1	46.36 -14	12.4 1.4	42.90 -14	68.9 0.7	55.04 -12	33.8 1.7
30.9	50.09 -20	66.4 0.0	46.51 -17	11.1 1.2	43.06 -17	69.6 0.6	55.17 -15	32.1 1.6
Feb. 9.9	50.30 -23	66.4 0.0	46.70 -20	9.9 1.1	43.24 -19	70.2 0.5	55.33 -18	30.6 1.4
19.9	50.54 -25	66.3 -0.1	46.91 -22	8.9 0.8	43.44 -21	70.7 0.3	55.52 -20	29.3 1.1
Mar. 1.9	50.80 -27	66.2 0.2	47.14 -24	8.3 0.5	43.63 -24	70.9 +0.1	55.74 -23	28.3 0.8
11.8	51.08 -28	65.9 0.3	47.39 -26	7.9 -0.2	43.92 -26	71.0 -0.1	55.98 -25	27.7 0.5
21.8	51.36 -29	65.5 0.4	47.66 -27	7.8 +0.1	44.19 -27	70.8 0.3	56.23 -26	27.4 -0.1
31.8	51.66 -30	65.0 0.5	47.93 -28	8.0 0.4	44.47 -28	70.3 0.5	56.50 -27	27.5 +0.3
April 10.8	51.96 -30	64.4 0.6	48.21 -28	8.6 0.7	44.75 -29	69.7 0.8	56.78 -28	28.0 0.7
20.7	52.27 -30	63.7 0.7	48.50 -28	9.4 1.0	45.04 -29	68.8 0.9	57.07 -29	28.9 1.0
30.7	52.57 -30	63.0 0.7	48.78 -28	10.6 1.3	45.33 -29	67.8 1.1	57.35 -28	30.1 1.3
May 10.7	52.86 -29	62.2 0.8	49.05 -27	11.9 1.4	45.62 -28	66.6 1.2	57.63 -28	31.6 1.6
20.6	53.14 -27	61.5 0.7	49.32 -25	13.5 1.6	45.89 -27	65.4 1.3	57.91 -26	33.3 1.8
30.6	53.40 -25	60.8 0.7	49.56 -23	15.1 1.7	46.14 -26	64.1 1.3	58.16 -24	35.2 2.0
June 9.6	53.64 -23	60.1 0.6	49.78 -20	16.8 1.7	46.38 -22	62.8 1.3	58.39 -22	37.3 2.1
19.6	53.84 -18	59.6 0.5	49.97 -17	18.5 1.6	46.58 -19	61.6 1.2	58.59 -19	39.3 2.1
29.5	54.00 -14	59.1 0.4	50.12 -14	20.2 1.6	46.75 -15	60.4 1.1	58.76 -15	41.4 2.0
July 9.5	54.13 -10	58.8 0.3	50.24 -10	21.8 1.5	46.89 -11	59.3 1.0	58.89 -11	43.4 2.0
19.5	54.21 -06	58.6 -0.1	50.31 -05	23.3 1.4	46.98 -07	58.4 0.9	58.98 -07	45.3 1.8
29.5	54.24 +01	58.5 0.0	50.34 +01	24.6 1.2	47.02 +02	57.6 0.7	59.02 +02	47.1 1.7
Aug. 8.4	54.23 -03	58.6 +0.1	50.33 -04	25.8 1.1	47.02 -02	57.0 0.6	59.02 -02	48.7 1.5
18.4	54.17 -08	58.7 0.2	50.27 -07	26.7 0.9	46.98 -07	56.5 0.4	58.98 -06	50.1 1.3
28.4	54.07 -12	58.9 0.2	50.18 -11	27.5 0.7	46.90 -10	56.2 0.2	58.89 -10	51.2 1.0
Sept. 7.3	53.94 -15	59.1 0.3	50.05 -14	28.1 0.5	46.78 -13	56.0 -0.1	58.77 -13	52.1 0.8
17.3	53.78 -17	59.4 0.3	49.90 -16	28.4 0.3	46.64 -15	56.0 0.0	58.62 -16	52.7 0.5
27.3	53.60 -18	59.7 0.3	49.73 -18	28.6 +0.1	46.48 -17	56.0 +0.1	58.46 -17	53.1 +0.3
Oct. 7.3	53.41 -19	60.0 0.3	49.55 -18	28.5 -0.2	46.30 -18	56.2 0.2	58.28 -18	53.3 0.0
17.2	53.23 -19	60.2 0.2	49.37 -18	28.3 0.3	46.12 -17	56.5 0.3	58.09 -18	53.1 -0.3
27.2	53.06 -16	60.4 0.2	49.20 -16	27.8 0.5	45.95 -16	56.8 0.4	57.91 -17	52.7 0.5
Nov. 6.2	52.90 -14	60.6 0.2	49.05 -14	27.2 0.7	45.80 -14	57.3 0.5	57.75 -16	52.1 0.8
16.2	52.78 -10	60.7 0.2	48.92 -11	26.4 0.9	45.67 -11	57.8 0.6	57.61 -12	51.1 1.0
26.1	52.70 -06	60.9 0.1	48.83 -07	25.4 1.1	45.58 -08	58.4 0.7	57.50 -09	50.0 1.3
Dec. 6.1	52.66 -02	61.0 0.1	48.78 -08	24.2 1.2	45.52 -04	59.1 0.7	57.42 -06	48.6 1.5
16.1	52.66 +03	61.2 0.1	48.76 +01	22.9 1.3	45.50 -00	59.9 0.8	57.38 -02	47.0 1.6
26.0	52.71 -07	61.3 0.2	48.79 -04	21.6 1.4	45.52 +04	60.7 0.8	57.38 +02	45.3 1.7
36.0	52.79 +10	61.5 +0.2	48.85 +08	20.1 -1.3	45.59 +08	61.5 +0.8	57.42 +06	43.6 -1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ. (<i>Altair</i> .)		β Aquilæ.		γ Aquilæ.		α^2 Capricorni.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	^h ₁₉ ^m ₄₄	[°] ₈ ['] ₃₁	^h ₁₉ ^m ₄₈	[°] ₆ ['] ₄	^h ₁₉ ^m ₅₇	[°] ₆ ['] ₅₄	^h ₂₀ ^m ₁₀	[°] ₁₂ ['] ₅₆
Jan. 1.0	^s _{16.31} +.04	["] _{17.9} -1.7	^s _{45.49} +.03	["] _{44.1} -1.8	^s _{37.35} +.03	["] _{24.7} -1.6	^s _{38.99} +.03	["] _{71.9} +0.4
11.0	16.37 -.08	16.2 1.7	45.54 -.07	42.5 1.8	37.39 -.06	23.1 1.6	39.03 -.07	72.2 0.3
21.0	16.47 -.11	14.6 1.6	45.64 -.11	41.0 1.8	37.48 -.10	21.6 1.8	39.12 -.10	72.5 0.3
31.0	16.69 -.14	13.0 1.8	45.76 -.14	39.5 1.4	37.59 -.13	20.1 1.4	39.24 -.13	72.8 0.3
Feb. 9.0	16.76 -.17	11.6 1.3	45.92 -.17	38.2 1.2	37.74 -.16	18.8 1.2	39.38 -.16	72.9 +0.1
19.0	16.95 -.20	10.4 1.0	46.10 -.20	37.2 1.0	37.92 -.19	17.7 1.0	39.56 -.19	72.9 -0.1
Mar. 1.0	17.16 -.23	9.5 0.8	46.31 -.23	36.4 0.7	38.12 -.21	16.9 0.7	39.76 -.23	72.7 0.2
11.0	17.39 -.24	8.9 -0.4	46.54 -.24	35.8 -0.3	38.34 -.23	16.3 -0.4	39.99 -.24	72.4 0.4
21.8	17.65 -.26	8.7 0.0	46.79 -.26	35.7 0.0	38.59 -.25	16.1 0.0	40.24 -.26	71.9 0.6
31.8	17.92 -.27	8.8 +0.3	47.06 -.27	35.8 +0.3	38.85 -.27	16.3 +0.3	40.50 -.27	71.2 0.8
April 10.8	18.20 -.28	9.3 0.7	47.34 -.28	36.4 0.7	39.13 -.28	16.8 0.7	40.79 -.29	70.3 1.0
20.7	18.48 -.29	10.2 1.0	47.62 -.29	37.2 1.0	39.41 -.29	17.7 1.0	41.08 -.30	69.3 1.1
30.7	18.77 -.29	11.4 1.3	47.91 -.29	38.4 1.3	39.70 -.29	18.9 1.3	41.38 -.30	68.1 1.2
May 10.7	19.05 -.28	12.9 1.6	48.19 -.28	39.8 1.6	39.98 -.28	20.3 1.6	41.68 -.30	66.9 1.3
20.7	19.33 -.27	14.6 1.8	48.47 -.27	41.4 1.7	40.26 -.27	22.0 1.7	41.97 -.29	65.6 1.3
30.6	19.58 -.25	16.5 1.9	48.73 -.25	43.2 1.8	40.53 -.26	23.8 1.9	42.26 -.28	64.4 1.2
June 9.6	19.82 -.22	18.5 2.0	48.97 -.23	45.1 1.9	40.77 -.28	25.7 1.9	42.52 -.28	63.2 1.2
19.6	20.03 -.19	20.5 2.0	49.18 -.19	47.0 1.9	40.99 -.20	27.7 2.0	42.76 -.29	62.0 1.1
29.6	20.20 -.15	22.5 2.0	49.35 -.16	48.9 1.9	41.17 -.17	29.6 1.9	42.98 -.19	61.0 0.9
July 9.5	20.34 -.11	24.5 1.9	49.49 -.12	50.7 1.8	41.32 -.13	31.5 1.8	43.15 -.18	60.2 0.8
19.5	20.43 -.07	26.3 1.7	49.59 -.08	52.4 1.8	41.43 -.09	33.3 1.7	43.28 -.11	59.4 0.6
29.5	20.48 +.03	28.0 1.6	49.65 +.03	54.0 1.8	41.49 +.04	35.0 1.8	43.37 -.07	58.9 0.5
Aug. 8.4	20.49 -.02	29.5 1.3	49.66 -.01	55.3 1.3	41.51 -.00	36.4 1.4	43.41 +.02	58.5 0.3
18.4	20.45 -.06	30.8 0.9	49.62 -.08	56.5 1.1	41.48 -.08	37.7 1.3	43.41 -.08	58.3 -0.1
28.4	20.37 -.10	31.9 0.8	49.55 -.08	57.5 0.8	41.42 -.08	38.7 0.9	43.36 -.07	58.2 0.0
Sept. 7.4	20.25 -.13	32.8 0.7	49.44 -.12	58.2 0.6	41.31 -.12	39.5 0.7	43.27 -.10	58.3 +0.1
17.3	20.11 -.16	33.4 0.5	49.30 -.13	58.7 0.4	41.18 -.15	40.1 0.5	43.15 -.12	58.5 0.3
27.3	19.95 -.17	33.7 +0.2	49.14 -.17	59.0 +0.2	41.02 -.17	40.5 +0.2	43.00 -.16	58.7 0.3
Oct. 7.3	19.77 -.18	33.9 0.0	48.97 -.18	59.1 -0.1	40.85 -.18	40.6 0.0	42.84 -.17	59.1 0.4
17.3	19.59 -.18	33.7 -0.2	48.79 -.18	58.9 0.3	40.67 -.18	40.5 -0.2	42.67 -.17	59.5 0.4
27.2	19.42 -.17	33.4 0.3	48.61 -.17	58.5 0.5	40.50 -.17	40.1 0.6	42.49 -.17	59.9 0.4
Nov. 6.2	19.25 -.16	32.7 0.7	48.45 -.16	57.9 0.7	40.33 -.18	39.5 0.7	42.33 -.18	60.3 0.4
16.2	19.12 -.12	31.9 1.0	48.31 -.13	57.1 0.8	40.19 -.18	38.8 0.9	42.19 -.13	60.8 0.5
26.1	19.01 -.09	30.8 1.2	48.20 -.10	56.1 1.1	40.08 -.19	37.8 1.1	42.08 -.10	61.2 0.5
Dec. 6.1	18.93 -.06	29.5 1.4	48.12 -.06	54.9 1.3	39.99 -.07	36.6 1.2	41.99 -.07	61.7 0.5
16.1	18.89 -.02	28.1 1.5	48.08 -.02	53.5 1.4	39.94 -.03	35.2 1.4	41.95 -.03	62.1 0.5
26.1	18.89 +.02	26.5 1.6	48.08 +.02	52.0 1.6	39.93 +.01	33.7 1.6	41.93 +.01	62.6 0.4
36.0	18.92 +.06	24.8 -1.7	48.11 +.06	50.5 -1.6	39.95 +.04	32.2 -1.6	41.96 +.06	63.0 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pavonis.		π Capricorni.		ϵ Delphini.		α Cygni.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 20.15	^m 57° 9'	^h 20 19	^m 18° 38'	^h 20 26	^m 10° 51'	^h 20 36	^m 44° 48'
Jan. 1.1	3.92 +.01	26.6 -2.2	40.89 +.02	38.8 0.0	50.32 .00	18.9 -1.6	52.61 -.08	36.4 -2.7
11.0	3.96 -.08	24.4 2.3	40.93 -.06	38.8 0.0	50.34 +.03	17.2 1.7	52.56 -.03	33.5 2.9
21.0	4.08 -.14	22.1 2.4	41.01 -.09	38.8 -0.1	50.39 -.07	15.6 1.6	52.55 +.02	30.5 3.0
31.0	4.25 -.21	19.7 2.4	41.12 .18	38.6 0.2	50.47 .10	13.9 1.6	52.60 -.07	27.5 3.0
Feb. 10.0	4.49 -.27	17.3 2.3	41.27 .16	38.3 0.3	50.59 .13	12.5 1.4	52.60 .12	24.6 2.9
19.9	4.79 -.32	15.0 2.3	41.44 .19	38.0 0.4	50.74 .16	11.2 1.2	52.84 .17	21.8 2.6
Mar. 1.9	5.13 -.36	12.8 2.1	41.64 .21	37.5 0.6	50.92 .19	10.2 0.9	53.03 .21	19.3 2.3
11.9	5.51 -.41	10.7 2.0	41.87 .24	36.9 0.7	51.12 .22	9.5 0.8	53.27 .26	17.3 1.8
21.9	5.94 -.44	8.8 1.8	42.12 .26	36.1 0.8	51.35 .24	9.1 -0.2	53.54 .29	15.7 1.3
31.8	6.30 -.47	7.2 1.5	42.39 .28	35.2 1.0	51.60 .26	9.1 +0.2	53.85 .32	14.7 0.7
April 10.8	6.87 -.49	5.8 1.3	42.68 .29	34.2 1.1	51.86 .27	9.5 0.6	54.19 .34	14.2 -0.2
20.8	7.37 -.50	4.6 1.0	42.97 .30	33.1 1.1	52.15 .29	10.3 1.0	54.54 .36	14.4 +0.4
30.7	7.87 -.51	3.8 0.7	43.28 .31	31.9 1.2	52.44 .29	11.5 1.3	54.91 .37	15.1 1.0
May 10.7	8.38 -.50	3.3 -0.3	43.59 .31	30.7 1.2	52.73 .29	12.9 1.6	55.27 .38	16.4 1.3
20.7	8.87 -.49	3.2 0.0	43.90 .30	29.6 1.2	53.02 .28	14.6 1.8	55.63 .38	18.2 2.0
30.7	9.35 -.46	3.4 +0.4	44.19 .39	28.4 1.1	53.29 .27	16.5 2.0	55.97 .38	20.4 2.4
June 9.6	9.79 -.42	3.9 0.7	44.47 .27	27.4 1.0	53.56 .26	18.6 2.1	56.28 .30	23.0 2.7
19.6	10.19 .37	4.8 1.0	44.73 .24	26.5 0.8	53.79 .23	20.8 2.2	56.55 .26	25.9 3.0
29.6	10.54 .32	6.0 1.3	44.95 .21	25.7 0.7	54.00 .19	22.9 2.1	56.79 .21	29.0 3.2
July 9.6	10.83 .25	7.5 1.6	45.14 .17	25.1 0.6	54.17 .15	25.0 2.1	56.97 .16	32.3 3.3
19.5	11.04 .18	9.2 1.8	45.29 .12	24.7 0.3	54.30 .11	27.1 2.0	57.11 .10	35.6 3.3
29.5	11.18 .10	11.1 2.0	45.39 .08	24.5 -0.1	54.39 .07	29.0 1.8	57.18 +.06	38.8 3.2
Aug. 8.5	11.25 +.02	13.2 2.1	45.44 +.08	24.4 0.0	54.43 +.02	30.7 1.6	57.20 -0.1	42.0 3.1
18.4	11.23 -.06	15.2 2.1	45.44 -.02	24.5 +0.2	54.43 -.02	32.3 1.4	57.16 .07	45.0 2.9
28.4	11.13 .13	17.3 2.0	45.40 .06	24.8 0.3	54.38 .06	33.6 1.3	57.07 .12	47.7 2.6
Sept. 7.4	10.97 .30	19.2 1.8	45.32 .10	25.1 0.4	54.30 .10	34.7 1.0	56.93 .16	50.2 2.3
17.4	10.74 .25	20.9 1.6	45.21 .13	25.5 0.3	54.18 .13	35.5 0.7	56.74 .20	52.3 1.9
27.3	10.46 .30	22.4 1.3	45.06 .16	26.0 0.3	54.04 .16	36.1 0.4	56.52 .22	54.1 1.6
Oct. 7.3	10.15 .32	23.6 0.9	44.89 .17	26.5 0.3	53.88 .17	36.4 +0.2	56.27 .26	55.4 1.1
17.3	9.81 .34	24.4 0.6	44.72 .18	27.0 0.3	53.70 .17	36.4 -0.1	56.01 .27	56.3 0.6
27.3	9.48 .33	24.8 +0.2	44.54 .17	27.5 0.4	53.53 .17	36.2 0.4	55.73 .27	56.7 +0.1
Nov. 6.2	9.15 .31	24.7 -0.3	44.38 .16	27.9 0.4	53.36 .16	35.7 0.6	55.46 .26	56.6 -0.4
16.2	8.86 .27	24.3 0.7	44.23 .14	28.2 0.3	53.21 .14	35.0 0.8	55.20 .25	55.9 0.9
26.2	8.61 .22	23.4 1.1	44.11 .11	28.5 0.3	53.08 .12	34.1 1.1	54.97 .22	54.8 1.4
Dec. 6.1	8.41 .17	22.1 1.4	44.01 .07	28.8 0.2	52.97 .09	32.0 1.3	54.76 .19	53.2 1.8
16.1	8.28 .10	20.5 1.7	43.96 -.04	28.9 0.2	52.90 .06	31.5 1.6	54.59 .15	51.2 2.2
26.1	8.21 -.03	18.6 2.0	43.94 .00	29.1 +0.1	52.86 -.02	29.9 1.6	54.45 .11	48.8 2.6
36.1	8.21 +.03	16.5 -2.2	43.96 +.04	29.2 0.0	52.85 +.02	29.3 -1.6	54.37 -.06	46.0 -2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Aquarii.		γ Cygni.		61 ¹ Cygni.		ϵ Cygni.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 20 ^m 45	[°] 9 ['] 28	^h 20 ^m 52	[°] 40 ['] 39	^h 21 ^m 0	[°] 38 ['] 5	^h 21 ^m 7	[°] 29 ['] 40
Jan. 1.1	27.39 .00	45.0 +0.0	11.79 -0.0	36.3 -2.0	54.87 -0.7	61.3 -2.3	15.59 -0.6	68.9 -2.2
11.1	27.41 +0.0	45.5 0.0	11.73 -0.0	33.7 2.7	54.82 -0.0	58.8 2.0	15.54 -0.0	66.7 2.2
21.0	27.45 .00	46.0 0.0	11.71 +0.1	30.9 2.8	54.81 +0.1	56.2 2.0	15.53 +0.1	64.3 2.4
31.0	27.53 .00	46.4 0.0	11.74 .00	28.0 2.8	54.84 .00	53.5 2.7	15.56 .00	61.9 2.4
Feb. 10.0	27.64 .12	46.6 +0.2	11.82 .10	25.2 2.7	54.91 .10	50.9 2.0	15.62 .00	59.5 2.2
20.0	27.78 .16	46.7 0.0	11.94 .16	22.5 2.8	55.04 .14	48.5 2.2	15.73 .12	57.3 2.1
Mar. 1.9	27.95 .18	46.6 -0.2	12.11 .19	20.2 2.2	55.20 .18	46.3 2.0	15.87 .10	55.4 1.6
11.9	28.15 .21	46.3 0.4	12.32 .22	18.2 1.6	55.40 .22	44.4 1.6	16.05 .20	53.8 1.4
21.9	28.37 .22	45.8 0.6	12.56 .26	16.6 1.3	55.65 .26	43.0 1.2	16.26 .22	52.6 1.0
31.9	28.61 .22	45.1 0.8	12.85 .30	15.6 0.7	55.93 .29	42.1 0.6	16.51 .26	51.8 -0.3
April 10.8	28.87 .27	44.2 1.0	13.16 .32	15.1 -0.2	56.23 .32	41.7 -0.1	16.78 .28	51.5 0.0
20.8	29.15 .29	43.0 1.2	13.49 .34	15.2 +0.4	56.56 .34	41.9 +0.4	17.07 .30	51.8 +0.3
30.8	29.45 .30	41.8 1.3	13.83 .36	15.9 0.9	56.90 .36	42.6 1.0	17.38 .31	52.5 1.0
May 10.7	29.75 .30	40.4 1.4	14.18 .38	17.1 1.4	57.25 .38	43.8 1.3	17.70 .32	53.7 1.4
20.7	30.05 .30	38.9 1.6	14.53 .40	18.8 1.9	57.60 .40	45.5 1.9	18.02 .32	55.3 1.8
30.7	30.34 .29	37.4 1.6	14.86 .42	20.9 2.4	57.94 .42	47.7 2.3	18.33 .31	57.3 2.2
June 9.7	30.62 .27	35.9 1.8	15.17 .40	23.4 2.6	58.26 .41	50.2 2.7	18.63 .29	59.7 2.4
19.6	30.88 .25	34.5 1.4	15.46 .36	26.1 2.9	58.55 .37	53.0 3.0	18.90 .26	62.2 2.6
29.6	31.11 .21	33.2 1.0	15.70 .32	29.1 3.1	58.81 .34	56.0 3.1	19.14 .22	64.9 2.8
July 9.6	31.31 .18	32.0 1.1	15.90 .28	32.3 3.2	59.03 .31	59.1 3.2	19.35 .19	67.8 2.8
19.5	31.47 .14	31.0 0.9	16.05 .24	35.5 3.2	59.20 .27	62.3 3.2	19.52 .14	70.6 2.8
29.5	31.59 .10	30.2 0.7	16.15 .20	38.6 3.1	59.32 .23	65.5 3.2	19.63 .10	73.4 2.8
Aug. 8.5	31.66 +0.0	29.5 0.8	16.19 +0.0	41.7 3.0	59.38 +0.0	68.6 3.0	19.71 +0.0	76.2 2.8
18.5	31.69 .00	29.1 0.4	16.18 -0.0	44.6 2.8	59.40 -0.1	71.6 2.9	19.73 .00	78.7 2.6
28.4	31.67 -0.0	28.8 -0.2	16.12 .00	47.4 2.6	59.36 .00	74.3 2.6	19.70 -0.0	81.1 2.2
Sept. 7.4	31.61 .00	28.7 0.0	16.01 .12	49.8 2.3	59.28 .11	76.9 2.3	19.63 .00	83.2 1.8
17.4	31.52 .11	28.8 +0.1	15.86 .17	51.9 1.9	59.15 .14	79.0 2.0	19.52 .12	85.0 1.6
27.4	31.39 .14	28.9 0.2	15.67 .20	53.7 1.6	58.99 .18	80.9 1.6	19.38 .16	86.5 1.3
Oct. 7.3	31.25 .15	29.2 0.3	15.45 .22	55.0 1.1	58.80 .20	82.3 1.2	19.21 .18	87.6 0.9
17.3	31.09 .16	29.6 0.4	15.22 .24	56.0 0.7	58.59 .21	83.3 0.8	19.03 .19	88.3 0.6
27.3	30.92 .16	30.1 0.5	14.97 .26	56.5 +0.2	58.37 .22	83.9 +0.4	18.83 .20	88.7 +0.2
Nov. 6.2	30.76 .16	30.6 0.5	14.73 .24	56.5 -0.2	58.15 .22	84.1 -0.1	18.63 .19	88.7 -0.2
16.2	30.62 .14	31.1 0.6	14.49 .22	56.0 0.7	57.94 .21	83.7 0.6	18.44 .18	88.2 0.6
26.2	30.49 .11	31.7 0.6	14.28 .21	55.0 1.2	57.74 .19	83.0 1.0	18.26 .17	87.4 1.0
Dec. 6.2	30.39 .09	32.3 0.6	14.08 .18	53.6 1.6	57.56 .18	81.7 1.4	18.11 .14	86.2 1.4
16.1	30.31 .06	32.9 0.6	13.92 .15	51.7 2.0	57.41 .13	80.1 1.8	17.97 .12	84.5 1.7
26.1	30.27 .02	33.5 0.6	13.79 .11	49.5 2.4	57.30 .10	78.0 2.2	17.87 .09	82.7 2.0
36.1	30.27 +0.1	34.1 +0.6	13.71 -0.7	47.0 -2.7	57.22 -0.6	75.7 -2.4	17.80 -0.6	80.5 -2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cephei.		1 Pegasi.		β Aquarii.		ξ Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 21 ^m 15	[°] 62 ['] 1	^h 21 ^m 15	[°] 19 ['] 14	^h 21 ^m 24	[°] 6 ['] 8	^h 21 ^m 30	[°] 8 ['] 26
Jan. 1.1	22.86 -24	37.6 -2.5	55.27 -06	23.3 -1.8	32.24 -04	73.7 +0.7	39.07 -03	54.5 +0.6
11.1	22.65 -17	34.9 2.0	55.24 -02	21.5 1.0	32.22 -01	74.4 0.0	39.05 -01	55.0 0.5
21.1	22.51 -10	31.8 2.2	55.23 +01	19.6 1.0	32.23 +02	75.0 0.5	39.05 +02	55.5 0.4
31.0	22.45 -02	28.6 2.2	55.26 -05	17.6 1.0	32.27 -05	75.5 0.4	39.08 -05	55.8 0.3
Feb. 10.0	22.46 +06	25.3 2.2	55.32 -08	15.8 1.8	32.33 -08	75.8 0.8	39.14 -08	56.0 +0.1
20.0	22.56 -14	22.1 2.1	55.42 -11	14.1 1.6	32.43 -12	76.0 +0.1	39.24 -11	56.1 0.0
Mar. 1.9	22.74 -22	19.0 2.0	55.55 -15	12.7 1.3	32.56 -14	76.1 -0.1	39.36 -14	56.0 0.2
11.9	23.00 -29	16.3 2.8	55.72 -18	11.5 1.0	32.72 -17	75.8 0.8	39.52 -17	55.6 0.5
21.9	23.33 -36	14.1 2.6	55.91 -21	10.7 0.8	32.91 -20	75.4 0.6	39.70 -20	55.0 0.7
31.9	23.72 -43	12.3 1.6	56.14 -24	10.4 -0.1	33.12 -23	74.7 0.6	39.91 -23	54.2 0.0
April 10.8	24.16 -46	11.1 0.9	56.39 -26	10.4 +0.2	33.36 -25	73.8 1.0	40.15 -25	53.2 1.1
20.8	24.64 -49	10.4 -0.2	56.66 -28	10.9 0.7	33.63 -27	72.6 1.2	40.41 -27	52.0 1.2
30.8	25.15 -51	10.5 +0.2	56.95 -30	11.8 1.1	33.91 -29	71.3 1.4	40.69 -29	50.6 1.5
May 10.8	25.67 -52	11.1 0.9	57.25 -30	13.0 1.5	34.20 -30	69.8 1.0	40.99 -30	49.1 1.6
20.7	26.18 -50	12.3 1.6	57.56 -30	14.7 1.8	34.50 -30	68.2 1.7	41.29 -30	47.3 1.6
30.7	26.67 -46	14.1 2.0	57.86 -30	16.6 2.0	34.80 -30	66.5 1.7	41.59 -30	45.8 1.7
June 9.7	27.13 -44	16.4 2.8	58.15 -29	18.8 2.2	35.09 -29	64.8 1.7	41.89 -29	44.1 1.7
19.6	27.55 -39	19.0 2.0	58.42 -26	21.1 2.4	35.37 -27	63.1 1.6	42.17 -27	42.5 1.6
29.6	27.90 -32	22.1 2.2	58.66 -22	23.6 2.6	35.63 -24	61.5 1.0	42.43 -26	41.0 1.6
July 9.6	28.19 -26	25.4 2.4	58.87 -19	26.1 2.6	35.86 -21	60.1 1.2	42.66 -21	39.6 1.8
19.6	28.41 -18	28.8 2.8	59.05 -15	28.5 2.4	36.05 -17	58.7 1.2	42.86 -18	38.4 1.1
29.5	28.55 -10	32.4 2.6	59.18 -11	30.9 2.2	36.20 -13	57.6 1.0	43.02 -14	37.4 0.9
Aug. 8.5	28.60 +02	35.0 2.5	59.26 -08	33.2 2.8	36.30 -09	56.7 0.8	43.13 -09	36.6 0.7
18.5	28.58 -06	30.5 2.4	59.31 +02	35.3 2.0	36.37 +04	56.0 0.6	43.20 +06	36.0 0.6
28.5	28.48 -14	42.8 2.2	59.30 -08	37.2 1.8	36.38 -00	55.5 0.4	43.23 -00	35.6 0.3
Sept. 7.4	28.30 -21	46.0 2.0	59.25 -07	38.9 1.5	36.36 -04	55.2 0.2	43.21 -04	35.4 +0.1
17.4	28.06 -27	48.9 2.7	59.17 -10	40.3 1.2	36.30 -08	55.0 -0.1	43.15 -07	35.4 -0.1
27.4	27.75 -33	51.4 2.3	59.05 -12	41.3 1.0	36.20 -11	55.1 +0.1	43.06 -10	35.6 0.2
Oct. 7.3	27.40 -37	53.6 1.9	58.91 -15	42.2 0.7	36.08 -13	55.3 0.3	42.95 -13	35.0 0.4
17.3	27.01 -40	55.3 1.8	58.75 -16	42.6 +0.2	35.94 -16	55.6 0.4	42.81 -14	35.3 0.5
27.3	26.59 -42	56.5 1.0	58.58 -17	42.8 0.0	35.79 -18	56.1 0.5	42.66 -16	35.8 0.5
Nov. 6.3	26.16 -48	57.2 +0.4	58.41 -17	42.6 -0.2	35.64 -18	56.6 0.6	42.51 -18	37.4 0.6
16.2	25.73 -48	57.3 -0.2	58.24 -16	42.2 0.0	35.49 -14	57.2 0.6	42.36 -14	38.0 0.6
26.2	25.31 -41	56.8 0.6	58.00 -14	41.4 0.9	35.35 -12	57.8 0.7	42.22 -13	38.6 0.6
Dec. 6.2	24.91 -38	55.8 1.2	57.95 -12	40.3 1.2	35.24 -11	58.5 0.7	42.10 -11	39.2 0.6
16.2	24.55 -34	54.2 1.6	57.84 -12	39.0 1.6	35.14 -08	59.2 0.7	42.01 -08	39.9 0.6
26.1	24.24 -28	52.1 2.2	57.75 -07	37.4 1.7	35.08 -05	59.9 0.7	41.94 -06	40.5 0.6
36.1	23.99 -22	49.5 2.7	57.70 -02	35.6 1.8	35.04 -02	60.6 +0.7	41.89 -03	41.1 -0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi.		μ Capricorni.		α Aquarii.		α Gruis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination South.
	^h 21 ^m 37	[°] 9 ['] 15	^h 21 ^m 46	[°] 14 ['] 10	^h 21 ^m 58	[°] 0 ['] 57	^h 21 ^m 59	[°] 47 ['] 35
Jan. 1.1	38.33 -0.06	66.1 -1.3	1.46 -0.06	34.8 +0.3	56.21 -0.06	49.7 +0.9	48.37 -1.11	79.3 -1.2
11.1	38.28 -0.03	64.8 1.4	1.42 -0.03	35.0 0.3	56.16 -0.04	50.6 0.8	48.27 -0.07	77.9 1.5
21.1	38.27 -0.00	63.4 1.4	1.41 +0.01	35.1 +0.1	56.13 -0.01	51.4 0.8	48.22 -0.03	76.2 1.8
31.0	38.29 +0.03	62.1 1.3	1.43 -0.03	35.1 -0.1	56.14 +0.03	52.1 0.7	48.21 +0.02	74.2 2.0
Feb. 10.0	38.33 -0.06	60.8 1.2	1.48 -0.07	34.9 0.3	56.17 -0.08	52.7 0.5	48.25 -0.06	72.1 2.2
20.0	38.41 -0.10	59.7 1.0	1.56 -0.10	34.6 0.4	56.23 -0.08	53.2 0.4	48.34 -0.11	69.8 2.4
Mar. 2.0	38.52 -0.13	58.8 0.8	1.68 -0.13	34.1 0.6	56.32 -0.11	53.4 +0.2	48.47 -0.13	67.3 2.6
11.9	38.67 -0.16	58.2 0.6	1.82 -0.16	33.3 0.6	56.44 -0.14	53.5 -0.1	48.64 -0.20	64.8 2.6
21.9	38.84 -0.19	57.9 -0.2	2.00 -0.19	32.4 1.0	56.60 -0.17	53.2 0.4	48.86 -0.24	62.3 2.6
31.9	39.04 -0.22	57.9 +0.2	2.20 -0.22	31.3 1.2	56.78 -0.20	52.7 0.6	49.13 -0.26	59.8 2.6
April 10.9	39.27 -0.24	58.2 0.5	2.43 -0.23	30.1 1.4	57.00 -0.22	52.0 0.9	49.43 -0.22	57.4 2.8
20.8	39.53 -0.27	58.9 0.9	2.69 -0.27	28.6 1.6	57.24 -0.23	50.9 1.2	49.77 -0.23	55.2 2.9
30.8	39.81 -0.28	60.0 1.2	2.97 -0.29	27.1 1.6	57.51 -0.27	49.7 1.4	50.13 -0.28	53.1 2.9
May 10.8	40.10 -0.30	61.3 1.4	3.27 -0.30	25.5 1.6	57.79 -0.29	48.2 1.6	50.53 -0.30	51.2 1.7
20.7	40.40 -0.30	62.9 1.7	3.57 -0.31	23.8 1.7	58.09 -0.30	46.5 1.7	50.93 -0.31	49.6 1.4
30.7	40.69 -0.30	64.7 1.9	3.89 -0.31	22.1 1.6	58.39 -0.30	44.7 1.6	51.35 -0.32	48.3 1.1
June 9.7	40.99 -0.29	66.8 2.0	4.19 -0.30	20.5 1.6	58.69 -0.29	42.8 1.9	51.77 -0.31	47.4 0.7
19.7	41.27 -0.27	68.8 2.1	4.49 -0.29	19.0 1.4	58.98 -0.28	41.0 1.9	52.17 -0.30	46.9 -0.4
29.6	41.52 -0.24	71.0 2.1	4.76 -0.28	17.7 1.3	59.25 -0.26	39.1 1.8	52.55 -0.28	46.7 0.0
July 9.6	41.75 -0.21	73.1 2.1	5.01 -0.28	16.5 1.1	59.49 -0.28	37.4 1.7	52.90 -0.28	46.9 +0.4
19.6	41.94 -0.18	75.2 2.0	5.23 -0.29	15.5 0.9	59.71 -0.19	35.7 1.6	53.20 -0.28	47.5 0.6
29.6	42.10 -0.13	77.2 1.9	5.40 -0.18	14.8 0.6	59.88 -0.16	34.2 1.4	53.46 -0.23	48.5 1.1
Aug. 8.5	42.21 -0.09	79.0 1.7	5.54 -0.11	14.2 0.4	60.02 -0.13	32.9 1.3	53.65 -0.17	49.8 1.4
18.5	42.28 +0.06	80.6 1.5	5.62 -0.06	14.0 -0.2	60.11 -0.07	31.9 1.0	53.79 -0.10	51.4 1.7
28.5	42.30 -0.00	82.0 1.3	5.67 +0.02	13.9 0.0	60.16 +0.03	31.0 0.8	53.86 +0.04	53.1 1.9
Sept. 7.4	42.28 -0.04	83.2 1.1	5.66 -0.02	14.0 +0.2	60.17 -0.01	30.4 0.5	53.87 -0.02	55.1 2.0
17.4	42.23 -0.07	84.1 0.8	5.62 -0.06	14.4 0.4	60.14 -0.05	29.9 0.3	53.81 -0.06	57.1 2.0
27.4	42.14 -0.10	84.8 0.6	5.54 -0.09	14.8 0.5	60.07 -0.08	29.7 -0.1	53.70 -0.13	59.0 1.9
Oct. 7.4	42.02 -0.13	85.3 0.4	5.43 -0.12	15.4 0.6	59.97 -0.11	29.7 +0.1	53.55 -0.18	60.9 1.6
17.3	41.88 -0.14	85.5 +0.1	5.31 -0.14	16.0 0.7	59.85 -0.13	29.8 0.3	53.35 -0.21	62.6 1.6
27.3	41.73 -0.16	85.5 -0.1	5.16 -0.15	16.7 0.7	59.72 -0.14	30.1 0.4	53.13 -0.23	64.0 1.3
Nov. 6.3	41.58 -0.16	85.2 0.4	5.01 -0.16	17.4 0.7	59.58 -0.14	30.6 0.6	52.89 -0.24	65.2 1.0
16.3	41.43 -0.15	84.8 0.6	4.86 -0.14	18.0 0.6	59.43 -0.14	31.1 0.6	52.65 -0.24	66.0 0.6
26.2	41.29 -0.13	84.1 0.8	4.72 -0.13	18.7 0.6	59.30 -0.13	31.8 0.7	52.42 -0.23	66.4 +0.2
Dec. 6.2	41.16 -0.12	83.2 1.0	4.60 -0.12	19.2 0.5	59.17 -0.13	32.5 0.8	52.21 -0.20	66.3 -0.2
16.2	41.05 -0.10	82.2 1.1	4.49 -0.09	19.7 0.5	59.07 -0.10	33.4 0.8	52.02 -0.17	65.9 0.6
26.1	40.97 -0.07	81.0 1.3	4.41 -0.07	20.1 0.4	58.98 -0.08	34.2 0.9	51.86 -0.14	65.1 1.0
36.1	40.91 -0.05	79.6 -1.4	4.36 -0.04	20.5 +0.3	58.91 -0.05	35.1 +0.9	51.75 -0.10	64.0 -1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Aquarii.		♍ Aquarii.		♎ Aquarii.		♏ Pegasi.	
	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h 22 ^m 9	[°] 8 ['] 26	^h 22 ^m 18	[°] 0 ['] 42	^h 22 ^m 28	[°] 0 ['] 47	^h 22 ^m 34	[°] 10 ['] 8
Jan. 1.2	47.89 -07	39.2 +0.8	28.25 -008	14.8 -0.9	30.51 -008	65.6 +0.8	49.09 -009	21.7 -1.1
11.1	47.83 -04	39.7 0.4	28.19 -005	13.9 0.9	30.44 -008	66.4 0.8	49.00 -07	20.6 1.2
21.1	47.80 -03	40.1 0.4	28.15 -002	13.1 0.8	30.39 -04	67.2 0.7	48.94 -05	19.4 1.2
31.1	47.80 +01	40.4 0.2	28.13 -00	12.3 0.7	30.36 -01	67.9 0.6	48.91 -02	18.1 1.2
Feb. 10.0	47.82 -04	40.5 +0.1	28.14 +08	11.6 0.6	30.37 +02	68.4 0.5	48.90 +01	17.0 1.1
20.0	47.87 -07	40.5 -0.1	28.18 -06	11.1 0.4	30.40 -03	68.9 0.3	48.92 -04	15.9 0.9
Mar. 2.0	47.96 -10	40.3 0.3	28.25 -09	10.7 -0.2	30.46 -08	69.1 +0.1	48.97 -07	15.0 0.8
12.0	48.07 -13	39.9 0.5	28.36 -12	10.7 0.0	30.55 -11	69.1 -0.1	49.06 -10	14.4 0.6
21.9	48.22 -16	39.3 0.8	28.49 -15	10.8 +0.3	30.68 -15	68.9 0.4	49.18 -14	14.0 -0.2
31.9	48.40 -20	38.4 1.0	28.67 -19	11.2 0.6	30.84 -18	68.4 0.0	49.33 -17	13.9 +0.1
April 10.9	48.61 -23	37.3 1.2	28.87 -22	11.9 0.8	31.04 -21	67.6 0.9	49.52 -21	14.1 0.4
20.9	48.85 -26	36.0 1.4	29.10 -24	12.9 1.1	31.26 -24	66.6 1.2	49.75 -24	14.7 0.7
30.8	49.12 -27	34.5 1.6	29.36 -27	14.1 1.3	31.51 -26	65.3 1.4	50.00 -26	15.6 1.1
May 10.8	49.40 -29	32.8 1.7	29.63 -29	15.6 1.6	31.79 -28	63.8 1.6	50.27 -28	16.8 1.4
20.8	49.70 -30	31.1 1.8	29.93 -30	17.2 1.7	32.08 -30	62.1 1.8	50.56 -30	18.3 1.6
30.7	50.00 -31	29.3 1.8	30.23 -30	19.0 1.9	32.38 -30	60.3 1.9	50.87 -30	20.0 1.8
June 9.7	50.31 -30	27.5 1.8	30.53 -30	21.0 1.9	32.68 -30	58.4 1.9	51.17 -30	22.0 2.0
19.7	50.61 -29	25.8 1.7	30.83 -29	22.9 1.9	32.98 -29	56.4 1.9	51.47 -29	24.0 2.1
29.7	50.89 -27	24.1 1.6	31.10 -27	24.8 1.9	33.27 -27	54.6 1.9	51.76 -28	26.2 2.3
July 9.6	51.15 -24	22.6 1.4	31.36 -25	26.7 1.8	33.53 -25	52.7 1.8	52.02 -25	28.4 2.1
19.6	51.37 -21	21.3 1.3	31.59 -21	28.4 1.7	33.76 -22	51.0 1.8	52.26 -22	30.5 2.1
29.6	51.56 -17	20.2 1.0	31.78 -17	30.0 1.6	33.96 -18	49.5 1.6	52.46 -18	32.5 2.0
Aug. 8.6	51.71 -13	19.3 0.8	31.93 -13	31.5 1.3	34.13 -14	48.1 1.3	52.63 -14	34.4 1.8
18.5	51.82 -09	18.6 0.6	32.04 -09	32.7 1.1	34.25 -10	47.0 1.0	52.75 -10	36.1 1.7
28.5	51.88 +04	18.2 0.3	32.11 -06	33.7 0.9	34.33 -06	46.1 0.8	52.83 -06	37.7 1.5
Sept. 7.5	51.90 -00	18.0 -0.1	32.13 +01	34.4 0.6	34.36 +02	45.4 0.6	52.87 +02	39.0 1.2
17.4	51.88 -04	18.0 +0.1	32.12 -08	34.9 0.4	34.36 -02	44.9 0.3	52.86 -02	40.1 1.0
27.4	51.83 -07	18.1 0.3	32.07 -07	35.3 +0.2	34.32 -06	44.7 -0.1	52.83 -06	41.0 0.7
Oct. 7.4	51.74 -10	18.5 0.4	31.99 -09	35.4 0.0	34.24 -09	44.7 +0.1	52.76 -06	41.6 0.6
17.4	51.62 -12	18.9 0.6	31.88 -11	35.3 -0.2	34.14 -11	44.8 0.2	52.66 -11	42.0 +0.8
27.3	51.49 -13	19.5 0.8	31.76 -13	35.1 0.3	34.03 -12	45.1 0.4	52.55 -11	42.2 0.0
Nov. 6.3	51.35 -14	20.1 0.6	31.63 -14	34.7 0.5	33.90 -13	45.5 0.5	52.42 -13	42.1 -0.2
16.3	51.21 -14	20.8 0.7	31.49 -14	34.1 0.6	33.77 -13	46.1 0.6	52.28 -14	41.8 0.4
26.3	51.08 -13	21.5 0.7	31.36 -13	33.5 0.7	33.63 -13	46.7 0.7	52.15 -13	41.3 0.6
Dec. 6.2	50.95 -12	21.2 0.7	31.23 -12	32.8 0.8	33.51 -12	47.5 0.8	52.01 -13	40.6 0.8
16.2	50.84 -10	22.8 0.7	31.12 -11	32.0 0.8	33.39 -11	48.2 0.8	51.89 -11	39.7 0.9
26.2	50.75 -08	23.5 0.6	31.02 -09	31.1 0.9	33.29 -09	49.1 0.8	51.78 -10	38.7 1.1
36.1	50.68 -06	24.0 +0.8	30.94 -07	30.2 -0.9	33.21 -07	49.9 +0.8	51.69 -08	37.6 -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Aquarii.		♐ Piscis Australis. (Fomalhaut.)		♈ Pegasi. (Markab.)	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.
	^h ₂₂ ^m ₄₅	[°] ₈ ['] ₁₆	^h ₂₂ ^m ₅₀	[°] ₃₀ ['] ₁₉	^h ₂₂ ^m ₅₈	[°] ₁₄ ['] ₂₉
Jan. 1.2	^s _{39.64} -09	["] _{72.8} +0.6	^s _{16.63} -11	["] _{42.4} -0.3	^s _{7.77} -10	["] _{31.7} -1.2
11.1	_{39.56} -07	_{73.4} 0.5	_{16.53} -09	_{42.0} 0.5	_{7.67} -09	_{30.5} 1.3
21.1	_{39.50} -06	_{73.8} 0.3	_{16.46} -08	_{41.4} 0.3	_{7.59} -07	_{29.2} 1.3
31.1	_{39.46} -02	_{74.0} +0.2	_{16.41} -08	_{40.5} 1.0	_{7.53} -06	_{27.9} 1.3
Feb. 10.1	_{39.45} -00	_{74.2} 0.0	_{16.39} -00	_{39.3} 1.3	_{7.50} -05	_{26.6} 1.3
20.0	_{39.46} +08	_{74.1} -0.2	_{16.40} +08	_{38.0} 1.3	_{7.49} +01	_{25.3} 1.3
Mar. 2.0	_{39.51} -06	_{73.8} 0.4	_{16.45} -07	_{36.4} 1.7	_{7.52} -04	_{24.2} 1.0
12.0	_{39.59} -10	_{73.4} 0.6	_{16.53} -10	_{34.6} 1.9	_{7.58} -08	_{23.3} 0.6
22.0	_{39.70} -13	_{72.7} 0.6	_{16.65} -14	_{32.7} 2.0	_{7.68} -12	_{22.7} 0.4
31.9	_{39.85} -16	_{71.8} 1.0	_{16.81} -16	_{30.6} 2.1	_{7.81} -16	_{22.3} -0.2
April 10.9	_{40.03} -20	_{70.6} 1.3	_{17.01} -21	_{28.4} 2.2	_{7.99} -19	_{22.3} +0.1
20.9	_{40.24} -22	_{69.2} 1.6	_{17.24} -25	_{26.2} 2.2	_{8.19} -22	_{22.6} 0.5
30.8	_{40.49} -26	_{67.7} 1.9	_{17.51} -28	_{24.0} 2.3	_{8.43} -26	_{22.3} 0.6
May 10.8	_{40.76} -28	_{66.0} 1.6	_{17.80} -31	_{21.8} 2.1	_{8.70} -28	_{24.3} 1.3
20.8	_{41.05} -30	_{64.2} 1.6	_{18.12} -33	_{19.8} 2.0	_{8.99} -30	_{25.7} 1.6
30.8	_{41.35} -30	_{62.3} 1.9	_{18.45} -34	_{17.9} 1.8	_{9.29} -31	_{27.3} 1.7
June 9.7	_{41.65} -31	_{60.4} 1.9	_{18.79} -34	_{16.1} 1.6	_{9.60} -31	_{29.1} 2.0
19.7	_{41.96} -30	_{58.6} 1.6	_{19.14} -34	_{14.6} 1.3	_{9.91} -30	_{31.2} 2.1
29.7	_{42.26} -29	_{56.8} 1.7	_{19.47} -32	_{13.4} 1.0	_{10.21} -29	_{33.3} 2.2
July 9.7	_{42.53} -26	_{55.2} 1.6	_{19.78} -30	_{12.6} 0.7	_{10.49} -27	_{35.6} 2.4
19.6	_{42.78} -22	_{53.7} 1.3	_{20.07} -27	_{12.0} -0.4	_{10.74} -24	_{37.8} 2.2
29.6	_{43.00} -20	_{52.5} 1.1	_{20.32} -23	_{11.8} 0.0	_{10.96} -20	_{40.0} 2.2
Aug. 8.6	_{43.18} -16	_{51.5} 0.9	_{20.53} -19	_{12.0} +0.3	_{11.15} -16	_{42.1} 2.1
18.5	_{43.32} -12	_{50.7} 0.6	_{20.70} -14	_{12.5} 0.6	_{11.29} -12	_{44.1} 1.9
28.5	_{43.42} -08	_{50.2} 0.4	_{20.81} -09	_{13.2} 0.0	_{11.40} -08	_{45.2} 1.7
Sept. 7.5	_{43.47} +03	_{50.0} -0.1	_{20.88} +04	_{14.3} 1.1	_{11.46} +04	_{47.5} 1.9
17.5	_{43.48} -01	_{50.0} +0.1	_{20.90} -00	_{15.5} 1.3	_{11.48} -00	_{48.9} 1.3
27.4	_{43.46} -04	_{50.2} 0.3	_{20.87} -05	_{16.9} 1.4	_{11.46} -03	_{50.6} 1.0
Oct. 7.4	_{43.40} -07	_{50.5} 0.4	_{20.81} -08	_{18.4} 1.3	_{11.41} -06	_{50.9} 0.6
17.4	_{43.32} -10	_{51.0} 0.5	_{20.71} -11	_{19.9} 1.5	_{11.33} -09	_{51.6} 0.5
27.4	_{43.21} -11	_{51.6} 0.7	_{20.58} -14	_{21.3} 1.4	_{11.23} -11	_{52.0} +0.3
Nov. 6.3	_{43.09} -13	_{52.3} 0.7	_{20.43} -15	_{22.6} 1.2	_{11.12} -13	_{52.1} 0.0
16.3	_{42.96} -13	_{53.0} 0.7	_{20.28} -16	_{23.7} 1.0	_{10.99} -12	_{52.0} -0.2
26.3	_{42.83} -13	_{53.8} 0.7	_{20.12} -16	_{24.7} 0.8	_{10.85} -12	_{51.7} 0.5
Dec. 6.2	_{42.70} -12	_{54.5} 0.7	_{19.96} -15	_{25.3} 0.6	_{10.72} -12	_{51.1} 0.7
16.2	_{42.58} -11	_{55.2} 0.7	_{19.81} -14	_{25.7} +0.3	_{10.59} -12	_{50.3} 0.9
26.2	_{42.47} -10	_{55.8} 0.6	_{19.68} -12	_{25.9} 0.0	_{10.47} -11	_{49.3} 1.0
36.2	_{42.38} -08	_{56.4} +0.5	_{19.57} -10	_{25.7} -0.3	_{10.36} -10	_{48.2} -1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Piscium.		♉ Piscium.		♊ Piscium.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	^h 23 ^m 21	[°] 5 ['] 38	^h 23 ^m 33	[°] 4 ['] 54	^h 23 ^m 52	[°] 6 ['] 7
Jan. 1.2	12.88 -11	56.7 -0.9	6.30 -11	21.3 -0.8	28.75 -12	37.6 -0.9
11.2	12.78 -10	55.6 0.9	6.19 -10	20.4 0.9	28.63 -11	36.8 0.9
21.1	12.69 -08	54.9 0.9	6.10 -08	19.5 0.9	28.53 -10	35.9 0.9
31.1	12.62 -06	54.0 0.9	6.02 -07	18.6 0.8	28.44 -08	35.0 0.8
Feb. 10.1	12.57 -04	53.1 0.8	5.97 -06	17.9 0.7	28.36 -06	34.3 0.7
20.1	12.55 -01	52.4 0.6	5.93 -03	17.2 0.6	28.31 -04	33.6 0.6
Mar. 2.0	12.56 +02	51.9 0.4	5.93 +01	16.7 0.4	28.29 -01	33.0 0.4
12.0	12.59 -06	51.5 -0.2	5.96 -04	16.4 -0.2	28.30 +02	32.6 -0.2
22.0	12.67 -09	51.4 0.0	6.02 -08	16.3 0.0	28.34 -06	32.5 0.0
April 1.0	12.78 -13	51.5 +0.2	6.12 -12	16.4 +0.2	28.42 -10	32.6 +0.2
10.9	12.93 -17	51.9 0.6	6.26 -16	16.9 0.6	28.54 -14	33.0 0.6
20.9	13.12 -20	52.6 0.9	6.43 -19	17.6 0.9	28.70 -18	33.6 0.8
30.9	13.34 -24	53.7 1.1	6.65 -22	18.6 1.1	28.90 -21	34.5 1.1
May 10.8	13.59 -28	54.9 1.4	6.89 -26	19.9 1.4	29.13 -25	35.8 1.3
20.8	13.86 -28	56.4 1.6	7.16 -28	21.4 1.6	29.39 -27	37.2 1.6
30.8	14.15 -30	58.2 1.8	7.45 -30	23.1 1.8	29.67 -29	38.9 1.8
June 9.8	14.46 -30	60.0 1.9	7.75 -30	25.0 1.9	29.97 -30	40.7 1.9
19.7	14.76 -30	62.0 2.0	8.06 -30	26.9 2.0	30.28 -31	42.6 2.0
29.7	15.06 -29	64.1 2.0	8.36 -30	29.0 2.0	30.58 -30	44.7 2.0
July 9.7	15.35 -28	66.1 2.0	8.65 -28	31.0 2.0	30.88 -29	46.7 2.0
19.7	15.61 -25	68.1 1.9	8.92 -26	32.9 1.9	31.16 -27	48.6 1.9
29.6	15.85 -22	69.9 1.8	9.17 -22	34.7 1.8	31.41 -24	50.5 1.8
Aug. 8.6	16.05 -18	71.6 1.6	9.38 -20	36.4 1.6	31.64 -21	52.3 1.7
18.6	16.22 -15	73.2 1.4	9.56 -16	37.9 1.4	31.83 -17	53.8 1.6
28.5	16.34 -11	74.5 1.2	9.70 -12	39.2 1.2	31.99 -14	55.2 1.3
Sept. 7.5	16.43 -07	75.7 1.0	9.80 -08	40.3 1.0	32.11 -10	56.4 1.0
17.5	16.48 +03	76.5 0.8	9.86 -04	41.1 0.7	32.18 -06	57.3 0.8
27.5	16.49 -01	77.2 0.6	9.88 +01	41.7 0.6	32.23 +02	58.0 0.6
Oct. 7.4	16.46 -04	77.6 0.3	9.87 -03	42.1 0.3	32.23 -01	58.4 0.4
17.4	16.41 -07	77.8 +0.1	9.83 -06	42.3 +0.1	32.21 -04	58.7 +0.1
27.4	16.33 -09	77.8 -0.1	9.76 -08	42.2 -0.1	32.16 -06	58.7 -0.1
Nov. 6.4	16.23 -10	77.6 0.2	9.67 -10	42.0 0.2	32.09 -08	58.6 0.2
16.3	16.12 -12	77.3 0.4	9.57 -11	41.6 0.2	31.99 -10	58.2 0.4
26.3	16.00 -12	76.8 0.6	9.46 -12	41.1 0.6	31.89 -11	57.8 0.6
Dec. 6.3	15.88 -12	76.2 0.7	9.34 -12	40.5 0.7	31.78 -12	58.2 0.6
16.2	15.76 -12	75.4 0.8	9.22 -12	39.7 0.8	31.66 -12	56.5 0.7
26.2	15.64 -11	74.6 0.9	9.10 -11	38.9 0.8	31.54 -12	55.7 0.8
36.2	15.53 -11	73.7 -1.0	8.99 -11	38.0 -0.9	31.42 -12	54.9 -0.8

328 SOLAR EPHEMERIS, 1867.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
Jan. 1	h m s	s	° ' "	"	"	"	m s	"	m s	h m s
1	18 47 20.95	21.66	23 0 26.0	25.3	11.041	12.48	+ 3 49.80	16 18.38	11.08	18 43 31.22
2	18 51 45.78	46.57	22 55 12.5	11.5	11.027	13.63	4 18.07	18.38	11.03	18 47 27.78
3	18 56 10.26	11.13	22 49 31.6	30.4	11.012	14.77	4 46.00	18.37	10.98	18 51 24.34
4	19 0 34.36	35.32	22 43 23.5	22.2	10.995	15.90	5 13.56	18.36	10.93	18 55 20.89
5	19 4 58.05	59.09	22 36 48.4	46.9	10.977	17.02	5 40.69	18.34	10.87	18 59 17.45
6	19 9 21.29	22.42	22 29 46.5	44.7	10.958	18.13	6 7.37	18.32	10.81	19 3 14.01
7	19 13 44.05	45.25	22 22 17.9	15.8	10.937	19.24	6 32.58	18.29	10.74	19 7 10.56
8	19 18 6.30	7.57	22 14 22.9	20.6	10.916	20.33	6 59.23	18.26	10.67	19 11 7.12
9	19 22 23.01	23.36	22 5 61.7	59.1	10.893	21.42	7 24.45	18.23	10.60	19 15 3.68
10	19 26 43.17	50.59	21 57 14.6	11.7	10.869	22.49	7 49.66	18.19	10.52	19 19 0.23
11	19 31 9.73	11.22	21 47 61.9	58.6	10.843	23.55	8 13.07	18.15	10.44	19 22 56.79
12	19 35 21.67	31.22	21 38 23.9	23.3	10.817	24.63	8 36.46	18.10	10.36	19 26 53.35
13	19 39 43.97	50.54	21 28 21.8	16.9	10.790	25.64	8 59.21	18.05	10.28	19 30 49.90
14	19 44 7.61	9.27	21 17 52.8	48.6	10.762	26.67	9 21.20	17.99	10.19	19 34 46.46
15	19 48 25.55	27.23	21 6 61.3	55.8	10.733	27.69	9 42.69	17.92	10.10	19 38 43.01
16	19 52 42.81	44.63	20 55 43.6	38.8	10.704	28.70	10 3.39	17.85	10.00	19 42 39.57
17	19 56 59.36	61.23	20 43 63.0	57.9	10.674	29.69	10 23.38	17.78	9.90	19 46 36.13
18	20 1 15.18	17.08	20 31 58.8	53.4	10.644	30.67	10 42.64	17.70	9.80	19 50 32.68
19	20 5 30.27	32.22	20 19 31.4	25.5	10.613	31.62	11 1.16	17.61	9.70	19 54 29.24
20	20 9 44.61	46.61	20 6 41.0	34.8	10.582	32.57	11 18.94	17.52	9.60	19 58 25.79
21	20 13 58.20	61.24	19 53 23.1	21.6	10.551	33.50	11 35.97	17.42	9.50	20 2 22.35
22	20 18 11.03	13.10	19 39 52.9	46.0	10.519	34.42	11 52.24	17.31	9.39	20 6 18.91
23	20 22 23.08	25.21	19 25 55.7	48.5	10.487	35.33	12 7.75	17.19	9.28	20 10 15.46
24	20 26 34.36	36.53	19 11 37.0	29.5	10.454	36.22	12 22.48	17.07	9.17	20 14 12.02
25	20 30 44.87	47.06	18 56 57.2	49.4	10.421	37.09	12 36.43	16.95	9.06	20 18 8.57
26	20 34 54.50	56.81	18 41 56.6	49.5	10.388	37.95	12 49.59	16.83	8.95	20 22 5.13
27	20 39 3.52	5.77	18 26 35.5	27.1	10.355	38.80	13 1.95	16.70	8.84	20 26 1.68
28	20 43 11.66	13.93	18 10 54.4	45.6	10.322	39.62	13 13.53	16.57	8.73	20 29 58.24
29	20 47 19.00	21.29	17 54 53.7	44.6	10.289	40.43	13 24.32	16.43	8.62	20 33 54.79
30	20 51 25.54	27.85	17 38 33.8	24.5	10.256	41.22	13 34.30	16.29	8.50	20 37 51.35
31	20 55 31.28	33.61	17 21 55.0	45.4	10.223	42.00	13 43.47	16.14	8.39	20 41 47.90
Feb. 1	20 59 36.21	38.56	17 4 57.7	47.8	10.189	42.76	13 51.83	15.99	8.27	20 45 44.46
2	21 3 40.33	42.70	16 47 42.5	32.3	10.155	43.50	13 59.39	15.84	8.16	20 49 41.01
3	21 7 43.63	46.01	16 29 63.7	59.3	10.121	44.22	14 6.13	15.68	8.04	20 53 37.57
4	21 11 46.11	48.50	16 12 19.7	9.1	10.087	44.93	14 12.06	15.52	7.93	20 57 34.12
5	21 15 47.77	50.17	15 54 12.9	2.0	10.053	45.62	14 17.17	15.35	7.81	21 1 30.68
6	21 19 43.62	51.02	15 35 49.8	38.7	10.019	46.29	14 21.45	15.18	7.70	21 5 27.23
7	21 23 48.65	51.05	15 16 70.9	59.7	9.985	46.94	14 24.91	15.01	7.58	21 9 23.78
8	21 27 47.86	50.26	14 53 16.5	5.1	9.951	47.58	14 27.55	14.84	7.46	21 13 20.34
9	21 31 46.27	48.67	14 38 67.0	55.4	9.918	48.19	14 29.40	14.66	7.35	21 17 16.89
10	21 35 43.88	46.27	14 19 42.9	31.1	9.884	48.78	14 30.45	14.48	7.24	21 21 13.45
11	21 39 40.69	43.07	13 59 64.7	52.7	9.851	49.37	14 30.70	14.30	7.13	21 25 10.00
12	21 43 36.70	39.07	13 40 12.6	0.5	9.818	49.94	14 30.16	14.12	7.02	21 29 6.55
13	21 47 31.93	34.29	13 19 67.1	54.9	9.786	50.49	14 28.83	13.93	6.91	21 33 3.11
14	21 51 26.40	28.75	12 59 48.6	36.3	9.754	51.02	14 26.74	13.74	6.80	21 36 59.66
15	21 55 20.12	22.45	12 39 17.7	5.3	9.723	51.54	14 23.89	13.54	6.70	21 40 56.21
16	21 59 13.09	15.41	12 18 34.7	22.2	9.693	52.04	14 20.30	13.34	6.59	21 44 52.77
17	22 3 5.34	7.64	11 57 40.0	27.5	9.663	52.52	14 15.99	13.13	6.49	21 48 49.32
18	22 6 56.89	59.17	11 36 33.9	21.4	9.634	52.99	14 10.98	12.92	6.39	21 52 45.87
19	22 10 47.74	50.00	11 15 16.8	4.2	9.605	53.43	14 5.27	12.70	6.29	21 56 42.43
20	22 14 37.92	40.16	10 53 49.1	36.5	9.577	53.86	13 58.89	12.48	6.19	22 0 38.98
21	22 18 27.44	29.66	10 31 71.3	58.7	9.550	54.28	13 51.86	12.26	6.10	22 4 35.53
22	22 22 16.34	18.53	10 10 23.8	11.2	9.525	54.68	13 44.20	12.03	6.01	22 8 32.08
23	22 26 4.62	6.78	9 48 26.9	14.3	9.500	55.06	13 35.93	11.80	5.92	22 12 28.64
24	22 29 52.32	54.44	9 26 21.0	8.5	9.475	55.42	13 27.06	11.57	5.83	22 16 25.19
25	22 33 39.43	41.52	9 3 66.6	54.2	9.451	55.77	13 17.61	11.33	5.74	22 20 21.74
26	22 37 35.98	38.04	8 41 44.0	31.7	9.429	56.10	13 7.59	11.09	5.65	22 24 18.29
27	22 41 11.98	14.01	8 19 13.6	1.4	9.406	56.41	12 57.03	10.84	5.57	22 28 14.85
28	22 44 57.46	59.46	7 56 35.9	23.8	9.384	56.71	12 45.96	10.60	5.49	22 32 11.40
29	22 48 42.42	44.39	7 33 51.2	39.2	9.363	57.00	12 34.39	10.35	5.42	22 36 7.95
30	22 52 26.89	28.82	7 10 50.9	48.1	9.343	57.26	12 22.31	10.10	5.34	22 40 4.50
31	22 56 10.88	12.77	6 47 62.5	50.8	9.323	57.51	+12 9.74.16	9.85	5.27	22 44 1.06

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

SOLAR EPHEMERIS, 1867. 329

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
Mar. 1	^h 22 ^m 48 ^s 42.42	44.39	— [°] 7 ['] 33 ["] 51.2	39.2	9.363	57.00	+12 ^m 34.39	16 ['] 10.35	^m 5.42	^h 22 ^m 36 ^s 7.95
2	22 52 26.89	28.82	7 10 59.9	48.1	9.343	57.26	12 22.31	10.10	5.34	22 40 4.50
3	22 56 10.88	12.77	6 47 62.5	50.8	9.323	57.51	12 -9.74	9.85	5.27	22 44 1.06
4	22 59 54.41	56.26	6 24 59.3	47.8	9.304	57.74	11 56.71	9.60	5.21	22 47 57.61
5	23 3 37.48	39.30	6 1 50.8	39.5	9.286	57.95	11 43.22	9.34	5.15	22 51 54.16
6	23 7 21.13	21.90	5 38 37.4	26.2	9.268	58.15	11 29.31	9.08	5.09	22 55 50.71
7	23 11 2.36	4.09	5 15 19.5	8.5	9.251	58.34	11 15.00	8.82	5.03	22 59 47.26
8	23 14 44.19	45.88	4 51 57.5	46.7	9.235	58.50	11 0.28	8.57	4.97	23 3 43.82
9	23 18 25.64	27.29	4 28 31.7	21.1	9.219	58.65	10 45.18	8.31	4.92	23 7 40.37
10	23 22 6.72	8.33	4 4 62.6	52.2	9.204	58.78	10 29.71	8.06	4.87	23 11 36.92
11	23 25 47.44	49.01	3 41 33.5	20.4	9.189	58.89	10 13.87	7.80	4.82	23 15 33.47
12	23 29 27.82	29.35	3 17 55.9	46.0	9.175	58.99	9 57.70	7.54	4.77	23 19 30.02
13	23 33 7.89	9.37	2 54 19.1	9.4	9.162	59.08	9 41.22	7.28	4.73	23 23 26.57
14	23 37 47.67	49.10	2 30 40.4	31.0	9.151	59.14	9 24.44	7.02	4.69	23 27 23.13
15	23 40 27.17	28.56	2 6 63.4	51.3	9.140	59.20	9 7.38	6.76	4.65	23 31 19.68
16	23 44 6.42	7.76	1 43 19.3	10.5	9.130	59.23	8 50.08	6.50	4.62	23 35 16.23
17	23 47 45.45	46.75	1 19 37.5	29.0	9.121	59.25	8 32.56	6.23	4.59	23 39 12.78
18	23 51 24.28	25.54	0 55 55.3	47.1	9.113	59.26	8 14.85	5.96	4.57	23 43 9.33
19	23 55 2.92	4.13	0 32 13.1	5.2	9.106	59.25	7 56.95	5.69	4.55	23 47 5.88
20	23 58 41.41	42.57	— 0 8 31.3	23.7	9.101	59.23	7 38.89	5.42	4.53	23 51 2.43
21	0 2 19.77	20.89	+ 0 15 9.9	17.2	9.096	59.20	7 20.70	5.14	4.51	23 54 58.99
22	0 5 58.02	59.09	0 38 50.1	57.1	9.092	59.15	7 2.40	4.86	4.49	23 58 55.54
23	0 9 36.19	37.21	1 2 28.9	35.6	9.089	59.08	6 44.02	4.58	4.48	0 2 52.09
24	0 13 14.30	15.28	1 26 6.0	12.4	9.087	59.00	6 25.58	4.30	4.47	0 6 48.64
25	0 16 52.37	53.31	1 49 41.0	47.1	9.086	58.91	6 7.11	4.02	4.46	0 10 45.19
26	0 20 30.44	31.32	2 13 13.6	19.4	9.086	58.83	5 48.63	3.74	4.46	0 14 41.75
27	0 24 8.50	9.33	2 36 43.5	48.9	9.086	58.68	5 30.14	3.45	4.46	0 18 38.30
28	0 27 46.59	47.38	3 0 10.3	15.3	9.088	58.55	5 11.68	3.17	4.46	0 22 34.85
29	0 31 24.74	25.48	3 23 33.7	38.4	9.091	58.40	4 53.28	2.88	4.47	0 26 31.40
30	0 35 2.96	3.65	3 46 53.3	57.7	9.094	58.23	4 34.95	2.60	4.48	0 30 27.95
31	0 38 41.25	41.90	4 10 8.7	12.8	9.098	58.05	4 16.70	2.31	4.49	0 34 24.51
Apr. 1	0 42 19.65	20.25	4 33 19.6	23.4	9.103	57.85	3 58.55	2.03	4.50	0 38 21.06
2	0 45 58.17	58.73	4 56 25.6	29.1	9.108	57.64	3 40.52	1.75	4.52	0 42 17.61
3	0 49 36.82	37.33	5 19 26.5	29.7	9.113	57.42	3 22.62	1.47	4.54	0 46 14.16
4	0 53 15.61	16.08	5 42 21.7	24.6	9.120	57.18	3 4.87	1.19	4.56	0 50 10.71
5	0 56 54.57	54.99	6 5 10.9	13.5	9.127	56.92	2 47.28	0.91	4.59	0 54 7.27
6	1 0 33.71	34.08	6 27 53.9	56.2	9.134	56.65	2 29.87	0.66	4.62	0 58 3.82
7	1 4 13.04	13.37	6 50 30.2	32.2	9.142	56.37	2 12.66	0.37	4.65	1 2 0.37
8	1 7 52.58	52.87	7 12 59.4	61.2	9.151	56.07	1 55.65	16 0.10	4.68	1 5 56.92
9	1 11 32.34	32.59	7 35 21.2	22.8	9.161	55.75	1 38.86	15 59.83	4.72	1 9 53.47
10	1 15 12.34	12.55	7 57 35.3	36.7	9.172	55.42	1 22.30	59.36	4.76	1 13 50.03
11	1 18 52.59	52.76	8 19 41.3	42.4	9.183	55.07	1 6.00	59.29	4.80	1 17 46.58
12	1 22 33.11	33.24	8 41 38.9	39.7	9.195	54.71	0 49.98	59.03	4.84	1 21 43.13
13	1 26 13.92	14.01	9 3 27.7	28.2	9.207	54.34	0 34.25	58.76	4.89	1 25 39.68
14	1 29 55.04	55.08	9 25 7.5	7.8	9.220	53.96	0 18.82	58.50	4.94	1 29 36.24
15	1 33 36.48	36.48	9 46 37.9	38.0	9.234	53.56	+ 0 3.70	58.23	4.99	1 33 32.79
16	1 37 18.25	18.22	10 7 58.5	58.4	9.248	53.15	— 0 11.08	57.97	5.05	1 37 29.34
17	1 41 0.39	0.32	10 29 9.0	8.7	9.263	52.73	0 25.50	57.71	5.10	1 41 25.89
18	1 44 42.90	42.80	10 50 9.1	8.6	9.280	52.28	0 39.53	57.45	5.16	1 45 22.45
19	1 48 25.81	25.67	11 10 58.6	57.9	9.297	51.83	0 53.17	57.19	5.22	1 49 19.00
20	1 52 9.13	8.96	11 31 37.0	36.1	9.314	51.37	1 6.40	56.93	5.28	1 53 15.55
21	1 55 52.89	52.68	11 52 4.1	3.1	9.332	50.89	1 19.21	56.67	5.34	1 57 12.11
22	1 59 37.09	36.85	12 12 19.5	18.3	9.351	50.39	1 31.56	56.41	5.40	2 1 8.66
23	2 3 21.75	21.48	12 32 23.0	21.6	9.371	49.89	1 43.44	56.15	5.47	2 5 5.21
24	2 7 6.88	6.58	12 52 14.2	12.7	9.392	49.37	1 54.85	55.89	5.54	2 9 1.77
25	2 10 52.50	52.17	13 11 52.7	51.1	9.413	48.83	2 5.77	55.63	5.61	2 12 58.32
26	2 14 38.63	38.27	13 31 18.4	16.6	9.434	48.29	2 16.20	55.38	5.68	2 16 54.87
27	2 18 25.28	24.90	13 50 30.8	28.9	9.455	47.74	2 26.12	55.13	5.75	2 20 51.43
28	2 22 12.45	12.05	14 9 29.7	27.7	9.477	47.17	2 35.50	54.88	5.83	2 24 47.98
29	2 25 60.15	59.73	14 28 14.7	12.6	9.499	46.58	2 44.34	54.63	5.90	2 28 44.53
30	2 29 48.38	47.93	14 46 45.5	43.3	9.521	45.98	2 52.67	54.39	5.98	2 32 41.09
31	2 33 37.15	36.68	+15 4 61.7	59.4	9.544	45.37	— 3 0.46	15 54.15	1 6.06	2 36 37.64

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.13 from the Sidereal Interval.

330 SOLAR EPHEMERIS, 1867.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
May	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
	1 2 33 37.15	36.68	+15 4 61.7	59.4	9.544	45.37	- 3 0.46	15 54.15	6.06	2 36 37.64
	2 2 37 26.47	25.99	15 23 3.1	0.8	9.567	44.75	3 7.70	53.91	6.14	2 40 34.20
	3 2 41 16.35	15.84	15 40 49.4	47.0	9.590	44.11	3 14.38	53.68	6.22	2 44 30.75
	4 2 45 6.78	6.25	15 58 20.1	17.7	9.613	43.45	3 20.51	53.45	6.30	2 48 27.30
	5 2 48 57.76	57.21	16 15 34.9	32.5	9.636	42.78	3 26.09	53.22	6.38	2 52 23.86
	6 2 52 49.29	48.72	16 32 33.4	30.9	9.659	42.10	3 31.12	53.00	6.46	2 56 20.41
	7 2 56 41.37	40.79	16 49 15.4	12.9	9.682	41.41	3 35.59	52.78	6.54	3 0 16.97
	8 3 0 34.01	33.42	17 5 40.8	38.3	9.705	40.71	3 39.50	52.56	6.62	3 4 13.52
	9 3 4 27.21	26.61	17 21 49.2	46.7	9.728	39.98	3 42.86	52.35	6.70	3 8 10.08
	10 3 8 20.96	20.35	17 37 40.1	37.6	9.751	39.25	3 45.66	52.14	6.78	3 12 6.63
	11 3 12 15.27	14.65	17 53 13.1	10.6	9.775	38.51	3 47.91	51.94	6.86	3 16 3.19
	12 3 16 10.13	9.51	18 8 28.1	25.6	9.798	37.75	3 49.61	51.74	6.95	3 19 59.74
	13 3 20 5.55	4.92	18 23 24.9	22.5	9.821	36.98	3 50.75	51.54	7.04	3 23 56.30
	14 3 24 1.53	0.90	18 38 3.1	0.8	9.844	36.20	3 51.33	51.35	7.12	3 27 52.85
	15 3 27 58.07	57.44	18 52 22.5	20.3	9.867	35.41	3 51.35	51.15	7.20	3 31 49.41
	16 3 31 55.16	54.53	19 6 22.7	20.5	9.891	34.61	3 50.81	50.96	7.28	3 35 45.96
	17 3 35 52.81	52.18	19 20 3.5	1.3	9.914	33.79	3 49.72	50.77	7.36	3 39 42.52
	18 3 39 51.02	50.39	19 33 24.6	22.5	9.937	32.97	3 48.06	50.58	7.44	3 43 39.07
	19 3 43 49.79	49.16	19 46 25.9	23.9	9.960	32.14	3 45.85	50.39	7.52	3 47 35.63
	20 3 47 49.11	48.49	19 59 7.0	5.1	9.983	31.29	3 43.08	50.21	7.60	3 51 32.18
	21 3 51 48.99	48.38	20 11 27.6	25.8	10.006	30.43	3 39.75	50.03	7.68	3 55 28.74
	22 3 55 49.41	48.81	20 23 27.6	25.8	10.029	29.56	3 35.88	49.85	7.75	3 59 25.21
	23 3 59 50.38	49.79	20 35 6.8	5.1	10.052	28.69	3 31.47	49.67	7.83	4 3 21.85
	24 4 3 51.88	51.30	20 46 24.9	23.3	10.074	27.81	3 26.52	49.50	7.90	4 7 18.41
	25 4 7 53.91	53.34	20 57 21.6	29.1	10.096	26.92	3 21.05	49.33	7.97	4 11 14.56
	26 4 11 56.46	55.91	21 7 56.7	55.3	10.117	26.02	3 15.06	49.17	8.04	4 15 11.52
	27 4 15 59.52	58.98	21 18 10.1	8.7	10.137	25.10	3 8.56	49.01	8.10	4 19 8.57
	28 4 20 3.07	2.55	21 28 1.4	0.1	10.157	24.17	3 1.57	48.85	8.16	4 23 4.63
	29 4 24 7.10	6.69	21 37 30.6	29.4	10.177	23.24	2 54.10	48.70	8.22	4 27 1.19
	30 4 28 11.59	11.11	21 46 37.3	36.3	10.196	22.31	2 46.17	48.55	8.28	4 30 57.74
June	31 4 32 16.53	16.07	21 55 21.4	20.4	10.214	21.36	2 37.79	48.40	8.34	4 34 54.30
	1 4 36 21.89	21.46	22 3 42.7	41.8	10.231	20.40	2 28.97	48.26	8.40	4 38 50.86
	2 4 40 27.66	27.26	22 11 41.0	40.2	10.247	19.44	2 19.75	48.13	8.46	4 42 47.41
	3 4 44 33.81	33.44	22 19 16.1	15.4	10.263	18.47	2 10.16	48.00	8.51	4 46 43.97
	4 4 48 40.32	39.98	22 26 27.8	27.2	10.278	17.50	2 0.22	47.88	8.56	4 50 40.53
	5 4 52 47.17	46.86	22 33 16.1	15.6	10.292	16.52	1 49.93	47.77	8.61	4 54 37.08
	6 4 56 54.35	54.07	22 39 40.7	40.3	10.305	15.53	1 39.31	47.66	8.66	4 58 33.64
	7 5 1 1.82	1.57	22 45 41.4	41.1	10.316	14.54	1 28.39	47.55	8.70	5 2 30.20
	8 5 5 9.56	19.34	22 51 18.2	17.9	10.327	13.54	1 17.19	47.44	8.74	5 6 26.75
	9 5 9 17.56	17.38	22 56 30.9	30.7	10.338	12.53	1 5.75	47.34	8.78	5 10 23.31
	10 5 13 25.79	25.64	23 1 19.5	19.3	10.347	11.52	0 54.07	47.25	8.82	5 14 19.87
	11 5 17 34.23	34.11	23 5 43.7	43.5	10.356	10.50	0 42.17	47.16	8.85	5 18 16.42
	12 5 21 42.87	42.78	23 9 43.5	43.4	10.364	9.49	0 30.09	47.07	8.87	5 22 12.98
	13 5 25 51.68	51.63	23 13 18.8	18.8	10.370	8.47	0 17.85	46.99	8.89	5 26 9.54
	14 5 30 0.64	0.63	23 16 29.6	29.6	10.376	7.44	0 5.45	46.91	8.91	5 30 6.09
	15 5 34 9.73	9.76	23 19 15.8	15.8	10.381	6.41	+ 0 7.09	46.83	8.93	5 34 2.65
	16 5 38 18.94	19.00	23 21 37.3	37.3	10.385	5.38	0 19.74	46.75	8.95	5 37 59.21
	17 5 42 28.24	28.34	23 23 34.1	34.1	10.388	4.35	0 32.49	46.68	8.96	5 41 55.76
	18 5 46 37.61	37.74	23 25 6.1	6.1	10.391	3.32	0 45.30	46.62	8.97	5 45 52.32
	19 5 50 47.04	47.21	23 26 13.3	13.3	10.393	2.28	0 58.17	46.56	8.96	5 49 48.88
	20 5 54 56.51	56.72	23 26 55.8	55.8	10.394	1.25	1 11.08	46.50	8.98	5 53 45.43
	21 5 59 5.99	6.24	23 27 13.5	13.5	10.395	0.21	1 24.02	46.44	8.98	5 57 41.99
	22 6 3 15.47	15.75	23 27 6.3	6.3	10.395	0.82	1 36.95	46.38	8.98	6 1 38.55
	23 6 7 24.93	25.25	23 26 34.3	34.2	10.394	1.85	1 49.85	46.33	8.97	6 5 35.10
	24 6 11 34.34	34.70	23 25 37.6	37.4	10.391	2.88	2 2.71	46.28	8.96	6 9 31.66
	25 6 15 43.67	44.07	23 24 16.2	16.0	10.387	3.91	2 15.48	46.24	8.94	6 13 28.22
	26 6 19 52.91	53.34	23 22 30.1	29.9	10.383	4.94	2 28.15	46.20	8.92	6 17 24.78
	27 6 24 2.02	2.49	23 20 19.3	19.1	10.377	5.96	2 40.71	46.17	8.90	6 21 21.33
	28 6 28 10.99	11.49	23 17 43.9	43.6	10.370	6.98	2 53.12	46.15	8.87	6 25 17.89
	29 6 32 19.79	20.32	23 14 44.0	43.6	10.362	8.00	3 5.36	46.13	8.84	6 29 14.45
	30 6 36 28.39	28.96	23 11 19.7	19.3	10.354	9.02	3 17.41	46.12	8.81	6 33 11.00
	31 6 40 36.76	37.37	+23 7 31.0	30.5	10.344	10.03	+ 3 29.23	15 46.11	8.78	6 37 7.56

Note. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

SOLAR EPHEMERIS, 1867. 331

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.	Mean Noon.	Ap- parent Noon.	Right Ascension.	Declination.				
July 1	6 40 36.76	37.37	+23 7 31.0	30.5	10.344	10.03	+ 3 29.23	15 46.11	8.78	6 37 7.56
2	6 44 44.89	45.53	23 3 18.1	17.4	10.332	11.04	3 40.80	46.10	8.75	6 41 4.12
3	6 48 52.74	53.41	22 58 41.0	40.2	10.320	12.04	3 52.09	46.10	8.71	6 45 0.67
4	6 53 0.29	0.90	22 53 39.9	39.0	10.307	13.04	4 3.10	46.11	8.67	6 48 57.23
5	6 57 7.52	8.25	22 48 14.9	13.9	10.293	14.04	4 13.77	46.12	8.62	6 52 53.79
6	7 1 14.47	15.16	22 42 26.1	25.0	10.279	15.03	4 24.10	46.14	8.57	6 56 50.34
7	7 5 20.91	21.69	22 36 13.7	12.5	10.262	16.01	4 34.05	46.17	8.52	7 0 46.90
8	7 9 27.03	27.83	22 29 37.9	36.6	10.245	16.98	4 43.62	46.20	8.47	7 4 43.46
9	7 13 32.74	33.56	22 22 38.7	37.3	10.228	17.95	4 52.77	46.23	8.42	7 8 40.01
10	7 17 38.02	38.87	22 15 16.4	14.9	10.210	18.91	5 1.49	46.27	8.36	7 12 36.57
11	7 21 42.86	43.73	22 7 31.1	29.4	10.192	19.86	5 9.77	46.31	8.30	7 16 33.13
12	7 25 47.25	48.14	21 59 22.9	21.0	10.173	20.81	5 17.61	46.35	8.24	7 20 29.68
13	7 29 51.16	52.07	21 50 52.2	50.2	10.153	21.75	5 24.96	46.40	8.17	7 24 26.24
14	7 33 54.59	55.52	21 41 59.0	56.9	10.132	22.68	5 31.82	46.45	8.10	7 28 22.80
15	7 37 57.52	58.47	21 32 43.6	41.4	10.111	23.59	5 38.20	46.51	8.03	7 32 19.35
16	7 41 59.95	60.92	21 23 6.2	3.9	10.090	24.50	5 44.08	46.57	7.96	7 36 15.91
17	7 46 1.88	2.86	21 13 7.0	4.6	10.069	25.41	5 49.45	46.63	7.88	7 40 12.46
18	7 50 3.29	4.28	21 2 46.1	43.5	10.048	26.31	5 54.30	46.70	7.81	7 44 9.02
19	7 54 4.17	5.17	20 52 3.8	1.1	10.026	27.20	5 58.62	46.77	7.73	7 48 5.58
20	7 58 4.52	5.53	20 40 60.4	57.6	10.004	28.08	6 2.41	46.84	7.65	7 52 2.13
21	8 2 4.33	5.35	20 29 36.1	33.2	9.981	28.94	6 5.66	46.91	7.57	7 55 58.69
22	8 6 3.69	4.62	20 17 51.0	47.9	9.958	29.80	6 8.38	46.99	7.49	7 59 55.24
23	8 10 2.32	3.32	20 5 45.5	42.3	9.935	30.65	6 10.54	47.07	7.41	8 3 51.80
24	8 14 0.48	1.50	19 53 19.9	16.7	9.912	31.48	6 12.14	47.16	7.33	8 7 48.36
25	8 17 58.07	59.09	19 40 34.4	31.1	9.888	32.30	6 13.17	47.25	7.24	8 11 44.91
26	8 21 55.09	56.11	19 27 29.1	25.7	9.864	33.11	6 13.63	47.34	7.16	8 15 41.47
27	8 25 51.53	52.55	19 14 4.5	1.0	9.840	33.92	6 13.52	47.44	7.07	8 19 38.02
28	8 29 47.39	48.41	19 0 20.7	17.1	9.816	34.72	6 12.82	47.55	6.99	8 23 34.58
29	8 33 42.67	43.68	18 46 18.1	14.4	9.791	35.49	6 11.53	47.66	6.90	8 27 31.13
30	8 37 37.36	38.36	18 31 56.9	53.2	9.766	36.26	6 9.66	47.78	6.82	8 31 27.69
31	8 41 31.44	32.44	18 17 17.5	13.8	9.741	37.02	6 7.20	47.90	6.73	8 35 24.24
Aug. 1	8 45 24.92	25.91	18 2 29.2	16.5	9.715	37.77	6 4.13	48.03	6.65	8 39 20.79
2	8 49 17.79	18.76	17 47 5.1	1.4	9.689	38.49	6 0.43	48.16	6.56	8 43 17.35
3	8 53 10.04	11.00	17 31 32.7	28.8	9.664	39.21	5 56.12	48.29	6.48	8 47 13.90
4	8 57 1.67	2.62	17 15 43.1	39.2	9.638	39.92	5 51.20	48.43	6.39	8 51 10.46
5	9 0 52.70	53.63	16 59 36.8	32.9	9.613	40.61	5 45.67	48.58	6.31	8 55 7.02
6	9 4 43.11	44.02	16 43 14.0	10.1	9.587	41.28	5 39.52	48.73	6.22	8 59 3.57
7	9 8 32.90	33.79	16 26 35.1	31.2	9.562	41.95	5 32.75	48.88	6.14	9 3 0.12
8	9 12 22.08	22.95	16 9 40.3	36.5	9.538	42.61	5 25.38	49.04	6.05	9 6 56.68
9	9 16 10.67	11.52	15 52 29.9	26.1	9.513	43.25	5 17.42	49.20	5.96	9 10 53.23
10	9 19 58.67	59.49	15 35 4.2	0.4	9.488	43.88	5 8.86	49.37	5.88	9 14 49.79
11	9 23 46.08	46.87	15 17 23.6	19.9	9.463	44.50	4 59.72	49.54	5.80	9 18 46.34
12	9 27 32.92	33.68	14 59 28.4	24.8	9.439	45.10	4 50.00	49.71	5.72	9 22 42.90
13	9 31 19.19	19.92	14 41 18.9	15.3	9.416	45.69	4 39.72	49.88	5.64	9 26 39.45
14	9 35 4.90	5.60	14 22 55.3	51.8	9.393	46.27	4 28.88	50.06	5.56	9 30 36.00
15	9 38 50.07	50.74	14 4 17.9	14.5	9.371	46.84	4 17.49	50.24	5.48	9 34 32.56
16	9 42 34.71	35.34	13 45 27.0	23.7	9.349	47.40	4 5.58	50.42	5.40	9 38 29.11
17	9 46 18.84	19.44	13 36 23.0	19.8	9.329	47.93	3 53.16	50.60	5.32	9 42 25.66
18	9 50 2.47	3.04	13 7 6.1	3.1	9.309	48.46	3 40.24	50.78	5.25	9 46 22.22
19	9 53 45.61	46.15	12 47 36.7	33.8	9.289	48.98	3 26.83	50.97	5.17	9 50 18.77
20	9 57 28.28	28.78	12 27 55.1	52.4	9.269	49.48	3 12.95	51.16	5.10	9 54 15.32
21	10 1 10.49	10.95	12 7 61.5	59.0	9.250	49.97	2 58.60	51.35	5.03	9 58 11.88
22	10 4 52.26	52.68	11 47 56.2	53.9	9.231	50.45	2 43.81	51.54	4.97	10 2 8.43
23	10 8 33.60	33.98	11 27 39.7	37.5	9.213	50.92	2 28.60	51.74	4.90	10 6 4.98
24	10 12 14.53	14.87	11 7 12.2	10.2	9.195	51.36	2 12.98	51.94	4.84	10 10 1.54
25	10 15 55.05	55.35	10 46 34.1	32.4	9.179	51.80	1 56.95	52.15	4.78	10 13 58.09
26	10 19 35.17	35.43	10 25 45.6	44.2	9.163	52.22	1 40.51	52.36	4.72	10 17 54.64
27	10 23 14.91	15.13	10 4 47.2	45.9	9.149	52.63	1 23.70	52.57	4.66	10 21 51.20
28	10 26 54.29	54.46	9 43 39.0	38.0	9.132	53.03	1 6.53	52.79	4.61	10 25 47.75
29	10 30 33.31	33.43	9 22 21.5	20.8	9.118	53.42	0 49.00	53.01	4.56	10 29 44.30
30	10 34 11.98	12.66	9 0 55.1	54.7	9.104	53.79	0 31.13	53.24	4.51	10 33 40.85
31	10 37 50.32	50.35	+ 8 39 20.0	19.8	9.090	54.14	+ 0 12.92	53.47	4.46	10 37 37.41

NOTE.—For Mean Interval of Semidiameter passing the Meridian, subtract 0.13 from the Sidereal Interval.

332 SOLAR EPHEMERIS, 1867.

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Apparent Noon.	Mean Noon.	Apparent Noon.	Right Ascension.	Declination.				
Sept. 1	^h 10 ^m 41 ^s 28.34	28.33	+ [°] 8 ['] 17 ["] 36.5	36.6	9.077	54.48	— ^m 0 ^s 5.60	15 ["] 53.70	^m 1 ^s 4.42	^h 10 ^m 41 ^s 33.96
2	10 45 6.06	6.00	7 55 45.1	45.5	9.064	54.81	0 24.43	53.93	4.37	10 45 30.51
3	10 48 43.48	43.37	7 33 46.0	46.7	9.053	55.11	0 43.56	54.17	4.33	10 49 27.06
4	10 52 20.62	20.46	7 11 39.6	40.6	9.042	55.41	1 2.97	54.41	4.29	10 53 23.62
5	10 55 57.50	57.29	6 49 26.2	27.5	9.031	55.70	1 22.63	54.66	4.26	10 57 20.17
6	10 59 34.13	33.87	6 27 6.2	7.8	9.021	55.97	1 42.54	54.91	4.23	11 1 16.72
7	11 3 10.54	10.23	6 4 39.9	41.8	9.012	56.22	2 2.68	55.16	4.20	11 5 13.27
8	11 6 46.74	46.38	5 42 7.6	9.9	9.004	56.47	2 23.03	55.41	4.17	11 9 9.83
9	11 10 22.75	22.34	5 19 29.6	32.2	8.997	56.70	2 43.57	55.66	4.15	11 13 6.38
10	11 13 58.60	58.14	4 56 46.3	49.3	8.991	56.91	3 4.27	55.92	4.13	11 17 2.93
11	11 17 34.30	33.79	4 33 58.0	61.3	8.985	57.11	3 25.11	56.18	4.11	11 20 59.48
12	11 21 9.88	9.32	4 11 4.9	8.5	8.980	57.30	3 46.08	56.44	4.09	11 24 56.03
13	11 24 45.36	44.75	3 48 7.4	11.3	8.976	57.48	4 7.16	56.70	4.08	11 28 52.58
14	11 28 20.77	20.10	3 25 5.8	10.1	8.974	57.64	4 28.31	56.95	4.07	11 32 49.14
15	11 31 56.11	55.39	3 2 0.5	5.2	8.972	57.79	4 49.50	57.21	4.06	11 36 45.69
16	11 35 31.43	30.66	2 38 51.7	56.8	8.971	57.93	5 10.72	57.47	4.06	11 40 42.24
17	11 39 6.74	5.92	2 15 39.8	45.2	8.971	58.05	5 31.96	57.73	4.06	11 44 38.79
18	11 42 42.08	41.20	1 52 25.1	30.8	8.972	58.16	5 53.18	58.99	4.06	11 48 35.35
19	11 46 17.45	16.52	1 29 7.9	14.0	8.975	58.26	6 14.35	58.25	4.06	11 52 31.90
20	11 49 52.89	51.91	1 5 48.5	55.0	8.978	58.35	6 35.45	58.51	4.07	11 56 28.45
21	11 53 28.40	27.37	0 42 27.3	34.1	8.982	58.41	6 56.48	58.77	4.08	12 0 25.00
22	11 57 4.02	2.93	+ 0 19 4.6	11.7	8.987	58.47	7 17.41	59.03	4.09	12 4 21.55
23	12 0 39.76	38.61	— 0 4 19.3	11.8	8.992	58.51	7 38.22	59.30	4.11	12 8 18.10
24	12 4 15.64	14.44	0 27 44.0	36.2	8.999	58.53	7 58.89	59.56	4.13	12 12 14.66
25	12 7 51.68	50.43	0 51 9.1	1.0	9.006	58.55	8 19.40	59.83	4.15	12 16 11.21
26	12 11 27.90	26.60	1 14 34.3	25.8	9.014	58.54	8 39.73	16 0.10	4.18	12 20 7.76
27	12 15 4.32	2.97	1 37 59.3	50.5	9.022	58.52	8 59.86	0.37	4.21	12 24 4.31
28	12 18 40.95	39.55	2 1 23.7	14.6	9.031	58.49	9 19.77	0.64	4.24	12 28 0.86
29	12 22 17.80	16.35	2 24 47.1	37.7	9.041	58.45	9 39.47	0.92	4.28	12 31 57.41
30	12 25 54.90	53.39	2 47 69.1	59.4	9.051	58.38	9 58.93	1.20	4.32	12 35 53.97
Oct. 1	12 29 32.25	30.69	3 11 29.3	19.3	9.062	58.30	10 18.12	1.48	4.36	12 39 50.52
2	12 33 9.88	8.27	3 34 47.4	37.1	9.074	58.20	10 37.04	1.76	4.40	12 43 47.07
3	12 36 47.81	46.15	3 57 63.1	52.6	9.087	58.09	10 55.66	2.05	4.45	12 47 43.62
4	12 40 26.05	24.35	4 21 16.0	5.2	9.100	57.97	11 13.97	2.34	4.50	12 51 40.17
5	12 44 4.63	2.88	4 44 25.6	14.5	9.114	57.83	11 31.94	2.62	4.55	12 55 36.72
6	12 47 43.56	41.76	5 7 31.7	20.4	9.129	57.67	11 49.57	2.90	4.61	12 59 33.28
7	12 51 22.86	21.01	5 30 33.7	22.2	9.145	57.49	12 6.82	3.18	4.67	13 3 29.83
8	12 55 2.55	0.65	5 53 31.4	19.6	9.162	57.30	12 23.67	3.46	4.73	13 7 26.38
9	12 58 42.66	40.72	6 16 24.5	12.5	9.180	57.10	12 40.12	3.74	4.80	13 11 22.93
10	13 2 23.20	21.22	6 39 12.6	0.3	9.199	56.89	12 56.13	4.02	4.87	13 15 19.48
11	13 6 4.20	2.18	7 1 55.2	42.7	9.218	56.66	13 11.69	4.30	4.94	13 19 16.04
12	13 9 45.69	43.62	7 24 32.1	19.5	9.239	56.41	13 26.76	4.58	5.01	13 23 12.59
13	13 13 27.67	25.56	7 46 62.9	50.1	9.260	56.15	13 41.33	4.85	5.09	13 27 9.14
14	13 17 10.17	8.02	8 9 27.2	14.2	9.283	55.88	13 55.38	5.13	5.17	13 31 5.69
15	13 20 53.23	51.03	8 31 44.7	31.6	9.306	55.58	14 8.88	5.40	5.25	13 35 2.25
16	13 24 36.86	34.62	8 53 55.0	41.8	9.330	55.27	14 21.80	5.67	5.33	13 38 58.80
17	13 28 21.08	18.81	9 15 57.7	44.4	9.356	54.95	14 34.13	5.94	5.42	13 42 55.35
18	13 32 5.91	3.60	9 37 52.4	39.0	9.382	54.61	14 45.85	6.21	5.51	13 46 51.90
19	13 35 51.37	49.02	9 59 38.8	25.3	9.408	54.25	14 56.95	6.47	5.60	13 50 48.46
20	13 39 37.48	35.09	10 21 16.5	2.9	9.435	53.88	15 7.41	6.74	5.69	13 54 45.01
21	13 43 24.25	21.83	10 42 45.2	31.5	9.462	53.50	15 17.21	7.00	5.79	13 58 41.56
22	13 47 11.71	9.26	11 3 64.4	50.7	9.491	53.09	15 26.31	7.26	5.88	14 2 38.12
23	13 50 59.86	57.38	11 25 13.7	0.0	9.520	52.67	15 34.72	7.52	5.98	14 6 34.67
24	13 54 48.70	46.20	11 45 72.8	50.1	9.549	52.24	15 42.43	7.78	6.08	14 10 31.22
25	13 58 38.25	35.73	12 6 61.1	47.4	9.580	51.79	15 49.43	8.04	6.18	14 14 27.77
26	14 2 28.54	25.99	12 27 38.3	24.6	9.611	51.32	15 55.71	8.30	6.28	14 18 24.33
27	14 6 19.57	17.00	12 47 64.0	50.4	9.642	50.82	16 1.24	8.56	6.39	14 22 20.88
28	14 10 11.35	8.76	13 8 17.8	4.3	9.673	50.31	16 6.02	8.82	6.50	14 26 17.43
29	14 14 3.88	1.27	13 28 19.2	5.8	9.705	49.78	16 10.05	9.08	6.61	14 30 13.99
30	14 17 57.17	54.54	13 47 67.9	54.6	9.737	49.24	16 13.31	9.34	6.72	14 34 10.54
31	14 21 51.24	48.59	14 7 43.3	30.1	9.769	48.69	16 15.81	9.59	6.83	14 38 7.10
32	14 25 46.08	43.42	— 14 26 65.1	52.0	9.801	48.12	— 16 17.55	9.84	6.94	14 42 3.65

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0s.18 from the Sidereal Interval.

SOLAR EPHEMERIS, 1867. 333

AT WASHINGTON MEAN AND APPARENT NOON.

Date.	APPARENT RIGHT ASCENSION.		APPARENT DECLINATION.		HOURLY MOTION.		Equation of Time for Apparent Noon.	Semi- diameter at Apparent Noon.	Sidereal Time of Semi- d. pass- ing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	Ap- parent Noon.	Mean Noon.	Ap- parent Noon.	Right Ascension.	Declination.				
Nov. 1	14 25 46.08	43.42	14 26 65.1	52.0	9.801	48.12	16 17.55	9.84	6.94	14 42 3.65
2	14 29 41.70	39.03	14 45 72.9	59.9	9.834	47.52	16 18.50	9.09	7.06	14 46 0.20
3	14 33 38.11	35.43	15 4 66.2	53.4	9.867	46.91	16 18.65	10.34	7.18	14 49 56.76
4	14 37 35.32	32.63	15 23 44.6	32.0	9.900	46.28	16 18.00	10.59	7.30	14 53 53.31
5	14 41 33.33	30.64	15 41 67.8	55.4	9.933	45.63	16 16.54	10.84	7.42	14 57 49.87
6	14 45 32.15	29.45	16 0 15.2	3.0	9.967	44.97	16 14.29	11.08	7.54	15 1 46.42
7	14 49 31.78	29.08	16 17 66.6	54.6	10.001	44.29	16 11.22	11.32	7.66	15 5 42.97
8	14 53 32.25	29.55	16 35 41.4	29.7	10.036	43.60	16 7.32	11.56	7.78	15 9 39.53
9	14 57 33.55	30.85	16 52 59.3	47.8	10.071	42.89	16 2.59	11.79	7.90	15 13 36.08
10	15 1 35.63	32.99	17 9 60.0	48.8	10.106	42.16	15 57.62	12.02	8.02	15 17 32.64
11	15 5 38.65	35.97	17 26 43.0	32.1	10.141	41.42	15 50.60	12.25	8.14	15 21 29.19
12	15 9 42.48	39.81	17 42 67.9	57.3	10.177	40.66	15 43.34	12.47	8.26	15 25 25.75
13	15 13 47.16	44.51	17 59 14.4	4.1	10.212	39.88	15 35.22	12.69	8.38	15 29 22.30
14	15 17 52.70	50.07	18 14 62.1	52.1	10.248	39.09	15 26.24	12.90	8.49	15 33 18.86
15	15 21 50.10	56.48	18 30 30.6	29.9	10.283	38.27	15 16.40	13.10	8.61	15 37 15.41
16	15 26 6.35	3.75	18 45 39.5	30.1	10.319	37.45	15 5.72	13.30	8.73	15 41 11.97
17	15 30 14.46	11.89	19 0 28.5	19.4	10.355	36.61	14 54.18	13.50	8.85	15 45 8.52
18	15 34 23.42	20.88	19 14 57.0	48.3	10.390	35.75	14 41.78	13.70	8.96	15 49 5.08
19	15 38 33.22	30.71	19 28 64.9	56.5	10.425	34.88	14 28.54	13.89	9.07	15 53 1.63
20	15 42 43.87	41.39	19 42 51.7	43.6	10.460	34.00	14 14.46	14.08	9.18	15 56 58.19
21	15 46 55.35	52.90	19 56 17.1	9.3	10.495	33.10	13 59.55	14.27	9.29	16 0 54.75
22	15 51 7.64	5.23	20 9 21.7	13.3	10.529	32.18	13 43.81	14.45	9.40	16 4 51.30
23	15 56 21.74	18.37	20 21 62.1	55.1	10.562	31.25	13 27.26	14.63	9.51	16 8 47.86
24	15 59 34.64	32.31	20 34 21.0	14.4	10.595	30.30	13 9.92	14.81	9.61	16 12 44.41
25	16 3 49.31	47.03	20 46 17.0	10.8	10.628	29.34	12 51.80	14.99	9.72	16 16 40.97
26	16 8 4.74	2.51	20 57 49.8	43.9	10.659	28.37	12 32.93	15.16	9.82	16 20 37.52
27	16 12 21.91	18.73	21 8 59.1	53.5	10.689	27.39	12 13.33	15.33	9.92	16 24 34.08
28	16 16 37.79	35.67	21 19 44.4	39.2	10.718	26.39	11 53.01	15.50	10.02	16 28 30.64
29	16 20 55.37	53.39	21 30 5.4	0.6	10.747	25.37	11 31.99	15.66	10.12	16 32 27.19
30	16 25 13.61	11.63	21 39 61.9	57.4	10.774	24.34	11 10.30	15.82	10.21	16 36 23.75
Dec. 1	16 29 32.49	30.55	21 49 33.6	29.4	10.800	23.30	10 47.97	15.98	10.30	16 40 20.31
2	16 33 52.00	50.13	21 58 40.1	36.3	10.825	22.25	10 25.02	16.13	10.39	16 44 16.86
3	16 38 12.11	10.31	22 7 21.1	17.6	10.850	21.18	10 1.46	16.28	10.47	16 48 13.42
4	16 42 32.83	31.06	22 15 36.3	33.1	10.874	20.10	9 37.33	16.42	10.55	16 52 9.98
5	16 46 54.05	52.38	22 23 25.6	22.7	10.897	19.01	9 12.65	16.56	10.63	16 56 6.53
6	16 51 15.82	14.23	22 30 48.8	46.2	10.919	17.92	8 47.44	16.70	10.70	17 0 3.09
7	16 55 38.10	36.58	22 37 45.6	43.3	10.939	16.82	8 21.71	16.83	10.77	17 3 59.65
8	16 59 61.85	59.41	22 44 15.8	13.8	10.958	15.70	7 55.50	16.95	10.83	17 7 56.20
9	17 4 24.05	22.63	22 50 19.1	17.4	10.977	14.58	7 28.84	17.07	10.89	17 11 52.76
10	17 8 47.63	46.41	22 55 55.4	53.8	10.994	13.45	7 1.76	17.19	10.95	17 14 49.32
11	17 13 11.74	10.54	23 1 4.5	3.1	11.110	12.31	6 34.27	17.30	11.00	17 19 45.87
12	17 17 36.17	35.05	23 5 46.1	44.9	11.025	11.17	6 6.39	17.40	11.05	17 23 42.43
13	17 21 60.95	59.91	23 9 67.2	59.2	11.040	10.62	5 38.16	17.50	11.10	17 27 38.99
14	17 26 26.05	25.10	23 13 46.7	45.9	11.053	8.87	5 9.60	17.59	11.14	17 31 35.54
15	17 30 51.45	50.59	23 17 5.5	4.9	11.064	7.71	4 40.75	17.67	11.18	17 35 32.10
16	17 35 17.13	16.36	23 19 56.3	55.9	11.075	6.54	4 11.62	17.75	11.21	17 39 28.66
17	17 39 43.04	42.36	23 22 19.1	18.8	11.084	5.37	3 42.25	17.82	11.23	17 43 25.22
18	17 44 9.16	8.57	23 24 13.8	13.6	11.092	4.20	3 12.68	17.88	11.25	17 47 21.77
19	17 48 35.45	34.95	23 25 40.4	40.3	11.098	3.03	2 42.94	17.94	11.27	17 51 18.33
20	17 53 1.87	1.46	23 26 38.9	38.9	11.103	1.85	2 13.07	18.00	11.28	17 55 14.89
21	17 57 28.40	28.08	23 27 9.1	9.1	11.106	0.67	1 43.09	18.06	11.29	17 59 11.45
22	18 1 55.00	54.78	23 27 10.9	10.9	11.108	0.51	1 13.03	18.11	11.30	18 3 8.00
23	18 6 21.63	21.50	23 26 44.4	44.4	11.108	1.69	0 42.94	18.16	11.30	18 7 4.56
24	18 10 48.25	48.21	23 25 49.7	49.7	11.107	2.86	0 12.87	18.20	11.29	18 11 1.12
25	18 15 14.82	14.87	23 24 26.8	26.8	11.105	4.04	0 17.16	18.24	11.28	18 14 57.67
26	18 19 41.31	41.45	23 22 35.7	35.7	11.101	5.21	0 47.09	18.27	11.27	18 18 54.23
27	18 24 7.67	7.91	23 20 16.4	16.3	11.095	6.39	1 16.91	18.30	11.25	18 22 50.79
28	18 28 33.86	34.20	23 17 28.9	28.7	11.087	7.56	1 46.56	18.32	11.23	18 26 47.34
29	18 32 59.86	63.28	23 14 13.4	13.1	11.078	8.72	2 16.00	18.34	11.20	18 30 43.90
30	18 37 25.61	26.11	23 10 30.0	29.5	11.067	9.88	2 45.19	18.36	11.17	18 34 40.46
31	18 41 51.09	51.68	23 6 18.7	18.1	11.055	11.04	3 14.11	18.38	11.14	18 38 37.02
32	18 46 16.27	16.95	23 1 39.7	39.0	11.042	12.19	3 42.75	18.39	11.10	18 42 33.57

NOTE. — For Mean Interval of Semidiameter passing the Meridian, subtract 0.18 from the Sidereal Interval.

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Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Transit.	Hourly Diff.	Sideral Time of Semid. passing Merid.	Stars.	Bright Limb.
	^h ^m ^s		^s				^h ^m ^s		^s		
Jan. 1	21 26.59	1.924	63.65		II.	Mar. 1	21 12.20	2.011	64.98		II.
2	22 13.26	1.963	64.19		II.	2	22 0.54	2.015	64.97		II.
3	23 0.80	1.992	64.60		II.	3	22 48.92	2.017	64.92		II.
4	23 48.88	2.005	64.79		II.	4	23 37.36	2.023	64.98		II.
6	0 37.06	2.002	64.71		I.	6	0 26.02	2.040	65.24		I.
7	1 24.96	1.987	64.51		I.	7	1 15.29	2.074	65.75		I.
8	2 12.42	1.968	64.25		I.	8	2 5.58	2.125	66.58		I.
9	2 59.41	1.955	64.12		I.	9	2 57.30	2.190	67.62		I.
10	3 46.30	1.962	64.24	165 .. 169	I.	10	3 50.75	2.266	68.85	15 .. 18	I.
11	4 33.60	1.993	64.73	173 .. 2	I.	11	4 46.07	2.337	69.97	22 .. 25	I.
12	5 21.06	2.052	65.69	3 .. 6	I.	12	5 42.92	2.386	70.76	29 .. 32	I.
13	6 12.12	2.144	67.11	9 .. 12	I.	13	6 40.61	2.402	71.01	34 .. 37	I.
14	7 4.86	2.260	68.85	12 .. 15	I.	14	7 38.22	2.378	70.58	39 .. 42	I.
15	8 0.58	2.382	70.66	19 .. 22	I.	15	8 34.71	2.317	69.63	51 .. 54	I.
16	8 59.20	2.487	72.16	27 .. 30	I.	16	9 29.47	2.236	68.32	60 .. 63	I.
17	9 59.95	2.544	72.97	33 .. 36	I.	17	10 22.03	2.148	66.92	68 .. 71	I.
18	11 1.34	2.537	72.81	38 .. 41	I.	18	11 12.54	2.069	65.67	76 .. 79	I.
19	12 1.75	2.466	71.73	48 .. 51	I.	19	12 1.34	2.006	64.67	83 .. 86	I.
20	12 59.69	2.347	69.97	60 .. 63	II.	20	12 48.84	1.961	63.98	90 .. 93	II.
21	13 54.42	2.213	67.97	65 .. 68	II.	21	13 35.51	1.936	63.65	98 .. 101	II.
22	14 45.92	2.089	66.13	75 .. 78	II.	22	14 21.77	1.927	63.60	106 .. 109	II.
23	15 34.69	1.990	64.66	83 .. 86	II.	23	15 7.98	1.931	63.75	109 .. 112	II.
24	16 21.42	1.920	63.65	90 .. 93	II.	24	15 54.47	1.944	64.01	114 .. 117	II.
25	17 6.87	1.882	63.10	98 .. 101	II.	25	16 41.37	1.961	64.31	123 .. 126	II.
26	17 51.77	1.874	62.97	106 .. 109	II.	26	17 28.58	1.972	64.56	128 .. 131	II.
27	18 36.73	1.883	63.17	109 .. 112	II.	27	18 16.03	1.981	64.71	134 .. 137	II.
28	19 22.18	1.911	63.57	113 .. 116	II.	28	19 3.66	1.986	64.77	141 .. 144	II.
29	20 8.44	1.945	64.07	122 .. 125	II.	29	19 51.36	1.989	64.77	147 .. 150	II.
30	20 55.56	1.978	64.54		II.	30	20 39.15	1.996	64.84		II.
31	21 43.40	2.003	64.86		II.	31	21 27.16	2.010	65.02		II.
Feb. 1	22 31.69	2.015	64.97		II.	Apr. 1	22 15.65	2.038	65.37		II.
2	23 20.14	2.015	64.90		II.	2	23 4.98	2.082	65.94		II.
4	0 8.41	2.005	64.73		I.	3	23 55.61	2.145	66.85		II.
5	0 56.38	1.994	64.55		I.	5	0 47.94	2.223	68.05		I.
6	1 44.14	1.991	64.51		I.	6	1 42.31	2.308	69.36		I.
7	2 31.96	2.003	64.76		I.	7	2 38.73	2.383	70.53		I.
8	3 20.20	2.037	65.34		I.	8	3 36.71	2.430	71.34	27 .. 30	I.
9	4 9.76	2.098	66.30	7 .. 10	I.	9	4 35.38	2.438	71.53	32 .. 35	I.
10	5 0.99	2.180	67.60	11 .. 14	I.	10	5 33.72	2.402	70.99	38 .. 41	I.
11	5 54.41	2.274	69.07	17 .. 20	I.	11	6 30.66	2.326	69.87	46 .. 49	I.
12	6 50.16	2.366	70.46	24 .. 27	I.	12	7 25.40	2.231	68.41	58 .. 61	I.
13	7 47.97	2.433	71.42	31 .. 34	I.	13	8 17.73	2.133	66.89	66 .. 69	I.
14	8 46.97	2.457	71.71	36 .. 39	I.	14	9 7.79	2.048	65.50	72 .. 75	I.
15	9 45.93	2.431	71.25	44 .. 47	I.	15	9 56.06	1.984	64.43	82 .. 85	I.
16	10 43.65	2.359	70.13	55 .. 58	I.	16	10 43.05	1.942	63.74	85 .. 88	I.
17	11 39.18	2.260	68.60	63 .. 66	I.	17	11 29.29	1.922	63.41	95 .. 98	I.
18	12 32.12	2.154	67.01	71 .. 74	I.	18	12 15.29	1.920	63.37	104 .. 107	I.
19	13 22.57	2.060	65.59	81 .. 84	II.	19	13 1.45	1.930	63.55	108 .. 111	II.
20	14 11.02	1.980	64.51	85 .. 88	II.	20	13 47.95	1.946	63.90	111 .. 114	II.
21	14 58.04	1.941	63.81	95 .. 98	II.	21	14 34.86	1.961	64.19	121 .. 124	II.
22	15 44.18	1.914	63.46	102 .. 105	II.	22	15 22.08	1.971	64.42	126 .. 129	II.
23	16 29.91	1.906	63.43	108 .. 111	II.	23	16 9.46	1.973	64.52	133 .. 136	II.
24	17 15.71	1.917	63.66	111 .. 114	II.	24	16 56.79	1.968	64.49	138 .. 141	II.
25	18 1.95	1.939	64.02	120 .. 123	II.	25	17 43.93	1.960	64.39	145 .. 148	II.
26	18 48.77	1.962	64.40	126 .. 129	II.	26	18 30.89	1.956	64.30	151 .. 154	II.
27	19 36.14	1.984	64.71	130 .. 133	II.	27	19 17.82	1.962	64.35	156 .. 159	II.
28	20 24.00	2.001	64.94	137 .. 140	II.	28	20 5.08	1.986	64.64	161 .. 164	II.
29	21 12.20	2.011	64.98		II.	29	20 53.13	2.029	65.25		II.
30	22 0.54	2.015	64.97		II.	30	21 42.52	2.098	66.24		II.
31	22 48.92	2.017	64.92		II.	31	22 33.85	2.191	67.61		II.

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Date.	Meridian Translt.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Translt.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	h m	m	s				h m	m	s		
May 1	22 33.85	2.191	67.61		II.	July 2	0 52.57	2.575	73.24		I.
2	23 27.69	2.301	69.25		II.	3	1 53.05	2.457	71.65		I.
4	0 24.29	2.414	70.89		I.	4	2 50.27	2.309	69.54		I.
5	1 23.38	2.503	72.18		I.	5	3 43.90	2.165	67.46	72.. 75	I.
6	2 24.05	2.541	72.77		I.	6	4 34.40	2.048	65.71	82.. 85	I.
7	3 24.86	2.514	72.46	36.. 39	I.	7	5 22.43	1.961	64.42	85.. 88	I.
8	4 24.28	2.428	71.30	44.. 47	I.	8	6 8.84	1.911	63.63	95.. 98	I.
9	5 21.15	2.308	69.59	55.. 58	I.	9	6 54.42	1.892	63.30	103.. 106	I.
10	6 14.99	2.180	67.71	63.. 66	I.	10	7 39.84	1.896	63.34	108.. 111	I.
11	7 5.89	2.067	65.97	70.. 73	I.	11	8 25.57	1.916	63.61	111.. 114	I.
12	7 54.38	1.979	64.58	80.. 83	I.	12	9 11.88	1.943	63.96	120.. 123	I.
13	8 41.13	1.922	63.64	84.. 87	I.	13	9 58.83	1.967	64.27	126.. 129	I.
14	9 26.86	1.894	63.14	93.. 96	I.	14	10 46.22	1.980	64.43	130.. 133	I.
15	10 12.22	1.890	63.02	102.. 105	I.	15	11 33.74	1.978	64.36	138.. 141	I.
16	10 57.72	1.904	63.20	106.. 109	I.	16	12 21.04	1.961	64.10	145.. 148	II.
17	11 43.70	1.923	63.57	110.. 113	I.	17	13 7.81	1.936	63.72	151.. 154	II.
18	12 30.23	1.953	63.97	116.. 119	II.	18	13 53.96	1.911	63.37	156.. 159	II.
19	13 17.39	1.971	64.24	124.. 127	II.	19	14 39.60	1.895	63.18	162.. 165	II.
20	14 4.81	1.978	64.43	129.. 132	II.	20	15 25.07	1.899	63.30	167.. 170	II.
21	14 52.22	1.970	64.38	136.. 139	II.	21	16 10.93	1.928	63.80	173.. 2	II.
22	15 39.30	1.953	64.18	143.. 146	II.	22	16 57.86	1.988	64.78	4.. 7	II.
23	16 25.96	1.934	63.93	149.. 152	II.	23	17 46.61	2.081	66.23	9.. 12	II.
24	17 12.19	1.920	63.76	153.. 156	II.	24	18 37.97	2.203	68.06	13.. 16	II.
25	17 58.26	1.922	63.80	157.. 160	II.	25	19 32.48	2.341	70.06	20.. 23	II.
26	18 44.63	1.947	64.17	165.. 168	II.	26	20 30.25	2.470	71.87	27.. 30	II.
27	19 31.93	2.000	64.97	172.. 1	II.	27	21 30.71	2.558	73.05		II.
28	20 21.89	2.086	66.25	3.. 6	II.	28	22 32.51	2.578	73.27		II.
29	21 12.31	2.204	67.96		II.	29	23 33.91	2.526	72.51		II.
30	22 6.82	2.342	69.94		II.	30	0 33.33	2.417	71.01		I.
31	23 4.68	2.478	71.85		II.	Aug. 1	1 29.82	2.288	69.13		I.
June 2	0 5.48	2.575	73.27		I.	2	2 23.18	2.163	67.31		I.
3	1 7.96	2.613	73.77		I.	3	3 13.78	2.059	65.80	83.. 86	I.
4	2 10.30	2.563	73.15		I.	4	4 2.24	1.985	64.72	93.. 96	I.
5	3 10.67	2.453	71.62	51.. 54	I.	5	4 49.30	1.942	64.08	102.. 105	I.
6	4 7.78	2.307	69.57	60.. 63	I.	6	5 35.64	1.924	63.82	106.. 109	I.
7	5 1.39	2.164	67.48	63.. 71	I.	7	6 21.81	1.926	63.85	110.. 113	I.
8	5 51.81	2.044	65.66	77.. 80	I.	8	7 8.20	1.941	64.06	116.. 119	I.
9	6 39.71	1.957	64.29	83.. 86	I.	9	7 55.02	1.960	64.31	124.. 127	I.
10	7 25.89	1.900	63.41	90.. 93	I.	10	8 42.25	1.974	64.48	129.. 132	I.
11	8 11.18	1.879	63.02	98.. 101	I.	11	9 29.72	1.979	64.50	136.. 139	I.
12	8 56.27	1.882	63.01	106.. 109	I.	12	10 17.18	1.974	64.34	143.. 146	I.
13	9 41.67	1.903	63.28	109.. 112	I.	13	11 4.39	1.958	64.05	149.. 152	I.
14	10 27.67	1.932	63.69	114.. 117	I.	14	11 51.15	1.938	63.72	153.. 156	I.
15	11 14.33	1.959	64.09	122.. 125	I.	15	12 37.45	1.922	63.47	158.. 161	II.
16	12 1.63	1.976	64.35	128.. 131	II.	16	13 23.48	1.917	63.42	165.. 168	II.
17	12 49.12	1.978	64.40	134.. 137	II.	17	14 9.61	1.931	63.68	172.. 1	II.
18	13 36.47	1.965	64.22	141.. 144	II.	18	14 56.35	1.968	64.33	3.. 7	II.
19	14 23.37	1.941	63.89	147.. 150	II.	19	15 44.31	2.033	65.39	8.. 11	II.
20	15 9.63	1.915	63.55	153.. 156	II.	20	16 34.15	2.124	66.82	11.. 14	II.
21	15 55.36	1.898	63.33	156.. 159	II.	21	17 26.40	2.233	68.47	18.. 21	II.
22	16 40.86	1.898	63.38	163.. 166	II.	22	18 21.34	2.345	70.13	25.. 28	II.
23	17 26.66	1.923	63.81	169.. 172	II.	23	19 18.80	2.438	71.44	31.. 34	II.
24	18 13.44	1.981	64.71	2.. 5	II.	24	20 18.03	2.489	72.11	37.. 40	II.
25	19 2.04	2.074	66.12	5.. 8	II.	25	21 17.83	2.484	71.98		II.
26	19 53.26	2.201	63.00	10.. 13	II.	26	22 16.86	2.426	71.10		II.
27	20 47.82	2.348	70.12	17.. 20	II.	27	23 14.01	2.333	69.71		II.
28	21 45.93	2.491	72.12		II.	28	0 8.76	2.230	63.18		I.
29	22 47.07	2.595	73.54		II.	29	1 1.10	2.134	66.78		I.
30	23 49.95	2.628	73.97		II.	30	1 51.35	2.058	65.67		I.
31	0 52.57	2.575	73.24		I.	31	2 40.05	2.005	64.91		I.

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Date.	Meridian Trans.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.	Date.	Meridian Trans.	Hourly Diff.	Sidereal Time of Semid. passing Merid.	Stars.	Bright Limb.
	^h ^m	^m	^s				^h ^m	^m	^s		
Sept. 1	2 40.05	2.005	64.91		I.	Nov. 1	3 57.05	1.981	64.68	134 .. 137	I.
2	3 27.75	1.974	64.50	105 .. 108	I.	2	4 44.31	1.956	64.33	141 .. 144	I.
3	4 14.94	1.965	64.36	109 .. 112	I.	3	5 30.92	1.928	63.94	148 .. 151	I.
4	5 2.00	1.962	64.40	113 .. 116	I.	4	6 16.92	1.907	63.61	153 .. 156	I.
5	5 49.15	1.968	64.52	122 .. 125	I.	5	7 2.56	1.899	63.46	156 .. 159	I.
6	6 36.46	1.974	64.61	128 .. 131	I.	6	7 48.24	1.911	63.60	164 .. 167	I.
7	7 23.89	1.977	64.61	134 .. 137	I.	7	8 34.50	1.949	64.13	170 .. 173	I.
8	8 11.31	1.973	64.49	141 .. 144	I.	8	9 22.01	2.015	65.10	2 .. 5	I.
9	8 53.56	1.963	64.27	147 .. 150	I.	9	10 11.45	2.109	66.48	7 .. 10	I.
10	9 45.53	1.951	64.01	153 .. 156	I.	10	11 3.42	2.225	68.17	11 .. 14	I.
11	10 32.23	1.942	63.81	156 .. 159	I.	11	11 58.28	2.347	69.97	17 .. 20	II.
12	11 18.81	1.942	63.77	163 .. 166	I.	12	12 55.97	2.454	71.53	25 .. 28	II.
13	12 5.55	1.956	63.99	169 .. 172	II.	13	13 55.75	2.517	72.45	31 .. 34	II.
14	12 52.86	1.990	64.53	2 .. 5	II.	14	14 56.30	2.516	72.53	37 .. 40	II.
15	13 41.23	2.045	65.42	5 .. 8	II.	15	15 56.06	2.453	71.70	45 .. 48	II.
16	14 31.17	2.129	66.62	10 .. 13	II.	16	16 53.74	2.348	70.22	57 .. 60	II.
17	15 23.10	2.209	68.02	17 .. 20	II.	17	17 48.65	2.229	68.49	65 .. 68	II.
18	16 17.22	2.300	69.41	22 .. 25	II.	18	18 40.78	2.120	66.84	71 .. 74	II.
19	17 13.37	2.375	70.54	29 .. 32	II.	19	19 30.57	2.037	65.51	81 .. 84	II.
20	18 10.97	2.418	71.16	35 .. 38	II.	20	20 18.67	1.978	64.60	85 .. 88	II.
21	19 9.08	2.417	71.12	41 .. 44	II.	21	21 5.79	1.953	64.13		II.
22	20 6.69	2.374	70.46	51 .. 54	II.	22	21 52.58	1.950	64.04		II.
23	21 2.81	2.303	69.35		II.	23	22 39.54	1.965	64.21		II.
24	21 57.08	2.229	68.08		II.	24	23 26.94	1.985	64.51		II.
25	22 49.38	2.141	66.87		II.	26	0 14.82	2.003	64.78		I.
26	23 39.97	2.078	65.89		II.	27	1 2.99	2.008	64.90		I.
27	0 29.26	2.033	65.21		I.	28	1 51.09	1.997	64.79		I.
28	1 17.70	2.007	64.84		I.	29	2 38.74	1.969	64.44		I.
29	2 5.68	1.994	64.70		I.	30	3 25.62	1.935	63.95	145 .. 148	I.
Oct. 1	2 53.49	1.991	64.71		I.	Dec. 1	4 11.61	1.898	63.43	151 .. 154	I.
2	3 41.26	1.990	64.78	120 .. 123	I.	2	4 56.79	1.870	63.03	156 .. 159	I.
3	4 29.02	1.989	64.81	126 .. 129	I.	3	5 41.51	1.861	62.89	162 .. 165	I.
4	5 16.71	1.983	64.75	130 .. 133	I.	4	6 26.30	1.878	63.15	167 .. 170	I.
5	6 4.17	1.971	64.58	137 .. 140	I.	5	7 11.85	1.924	63.88	173 .. 2	I.
6	6 51.29	1.955	64.32	144 .. 147	I.	6	7 58.94	2.006	65.11	4 .. 7	I.
7	7 38.04	1.941	64.04	150 .. 153	I.	7	8 48.41	2.125	66.84	9 .. 12	I.
8	8 24.50	1.932	63.84	155 .. 158	I.	8	9 41.06	2.267	68.91	13 .. 16	I.
9	9 10.89	1.936	63.83	161 .. 164	I.	9	10 37.26	2.416	71.05	20 .. 23	I.
10	9 57.55	1.955	64.08	167 .. 170	I.	10	11 36.86	2.543	72.82	27 .. 30	I.
11	10 44.91	1.996	64.66	173 .. 2	I.	11	12 38.84	2.608	73.74	34 .. 37	II.
12	11 33.51	2.059	65.69	4 .. 7	I.	12	13 41.41	2.591	73.55	39 .. 40	II.
13	12 23.86	2.140	66.85	9 .. 12	II.	13	14 42.64	2.501	72.32	51 .. 54	II.
14	13 16.35	2.236	68.29	13 .. 16	II.	14	15 41.09	2.366	70.45	61 .. 64	II.
15	14 11.16	2.329	69.72	20 .. 23	II.	15	16 36.13	2.224	68.43	68 .. 71	II.
16	15 7.98	2.401	70.83	27 .. 30	II.	16	17 27.97	2.101	66.62	79 .. 82	II.
17	16 6.11	2.435	71.39	33 .. 36	II.	17	18 17.21	2.010	65.22	84 .. 87	II.
18	17 4.50	2.422	71.23	38 .. 41	II.	18	19 4.71	1.955	64.34	93 .. 96	II.
19	18 2.02	2.365	70.43	47 .. 50	II.	19	19 51.28	1.931	63.92	102 .. 105	II.
20	18 57.80	2.281	69.19	59 .. 63	II.	20	20 37.59	1.932	63.90	106 .. 109	II.
21	19 51.45	2.191	67.81	67 .. 70	II.	21	21 24.17	1.951	64.11	110 .. 113	II.
22	20 43.02	2.110	66.53	74 .. 77	II.	22	22 11.29	1.975	64.42		II.
23	21 32.86	2.048	65.53		II.	23	22 58.93	1.993	64.66		II.
24	22 21.50	2.009	64.87		II.	24	23 46.86	1.998	64.72		II.
25	23 9.45	1.990	64.56		II.	26	0 34.69	1.984	64.51		II.
26	23 57.17	1.989	64.52		I.	27	1 21.98	1.953	64.06		I.
27						28	2 8.39	1.913	63.48		I.
28	0 44.99	1.996	64.66		I.	29	2 53.83	1.874	62.92		I.
29	1 33.00	2.004	64.84		I.	30	3 38.43	1.845	62.52	158 .. 161	I.
30	2 21.15	2.007	64.95		I.	31	4 22.49	1.832	62.42	165 .. 168	I.
31	3 9.26	1.999	64.90	128 .. 131	I.	32	5 6.48	1.839	62.74	171 .. 174	I.
32	3 57.05	1.981	64.68	134 .. 137	I.						

MOON-CULMINATING STARS. 337

MEAN PLACES FOR 1867.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
1	δ Piscium . .	6.5	^h 0 ^m 13 ^s 45.35	+3.086	+ 7° 27' 5.8"	+20.07
2	44 Piscium . .	6	0 18 35.18	3.075	+ 1 12 11.6	19.99
3	10 Ceti . . .	6	0 19 48.14	3.077	— 0 47 11.9	19.98
4	δ Piscium . .	4.5	0 41 47.02	3.108	+ 6 51 39.0	19.72
5	ϵ PISCIMUM . .	4	0 56 2.61	3.109	7 10 24.0	19.46
6	ζ^1 Piscium . .	5.4	1 6 47.04	+3.130	+ 6 52 16.8	+19.15
7	μ Piscium . .	5	1 23 13.07	3.138	5 27 22.6	18.57
8	η PISCIMUM . .	4.3	1 24 22.13	3.199	14 39 32.9	18.71
9	ν Piscium . .	5.4	1 34 30.69	3.118	4 48 46.9	18.35
10	\circ PISCIMUM . .	4	1 38 22.43	3.161	8 29 13.8	18.25
11	ξ^1 CETI . . .	4.5	2 5 57.16	+3.169	+ 8 13 17.2	+17.06
12	ξ^2 Ceti . . .	4	2 21 5.44	3.184	7 51 44.8	16.38
13	μ Ceti . . .	4	2 37 45.33	3.234	9 33 2.4	15.44
14	π Arietis . .	6.5	2 41 52.45	3.337	16 54 35.2	15.30
15	ϵ Arietis . .	4.5	2 51 36.72	3.421	20 48 23.4	14.69
16	λ Ceti . . .	6.5	2 52 35.66	+3.215	+ 8 22 34.2	+14.65
17	δ Arietis . .	4.5	3 4 1.69	3.421	19 13 17.7	13.94
18	ζ ARIETIS . .	4.5	3 7 15.65	3.436	20 32 58.5	13.65
19	f Tauri . . .	4	3 23 32.10	3.306	12 28 42.2	12.66
20	η TAURI . . .	3	3 39 34.93	3.553	23 41 28.9	11.47
21	ϵ Tauri . . .	5	3 40 58.75	+3.281	+10 43 53.4	+11.38
22	λ Tauri . . .	3.4	3 53 18.85	3.317	12 6 44.0	10.54
23	Δ^1 Tauri . .	5.4	3 56 50.12	3.536	21 42 56.7	10.21
24	γ TAURI . .	4	4 12 13.61	3.407	15 18 13.7	9.06
25	ν^1 Tauri . .	5.4	4 18 21.14	3.581	22 30 33.7	8.58
26	ϵ TAURI . . .	4.3	4 20 51.17	+3.495	+18 52 57.3	+ 8.38
27	α TAURI . .	1	4 28 17.48	3.435	16 14 22.0	7.65
28	τ Tauri . . .	4.5	4 34 15.92	3.594	22 41 57.0	7.33
29	ι Tauri . . .	5	4 55 8.91	3.582	21 23 49.4	5.57
30	11 ORIONIS . .	5	4 56 58.30	3.425	15 12 58.1	5.42
31	\circ Tauri . . .	6	5 19 38.85	+3.603	+21 49 13.6	+ 3.54
32	119 Tauri . .	6.5	5 24 25.09	3.517	18 29 32.5	3.12
33	ζ Tauri . . .	3.4	5 29 41.91	3.586	21 3 30.9	2.62
34	χ^1 Orionis . .	5.4	5 46 30.41	3.552	20 14 54.6	+ 1.08
35	ν Orionis . .	5.4	5 59 58.77	3.428	14 46 52.9	— 0.02
36	η Geminorum .	3.4	6 6 50.97	+3.624	+22 32 32.2	— 0.61
37	μ GEMINORUM	3	6 14 54.86	3.633	22 34 42.8	1.44
38	γ GEMINORUM	2.3	6 30 1.71	3.469	16 30 35.6	2.66
39	ξ Geminorum .	4.3	6 37 49.58	3.373	13 2 9.8	3.46
40	ζ Geminorum .	4	6 56 13.20	3.566	20 45 45.5	4.88
41	λ Geminorum .	4.3	7 10 27.00	+3.457	+16 46 39.8	— 6.07
42	δ GEMINORUM	3.4	7 12 10.71	3.591	22 13 27.3	6.23
43	63 Geminorum .	6.5	7 19 50.66	3.570	21 42 53.3	6.92
44	6 Canis Minoris	6.5	7 22 23.71	+3.347	+12 16 46.6	— 7.06

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MEAN PLACES FOR 1867.0

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
45	♊ Geminorum .	6.5	^h 7 ^m 26 ^s 1.00	+3.432	+16° 6' 37.5	— 7.31
46	f Geminorum .	6	7 31 47.72	3.475	17 58 28.4	7.81
47	1 Cancri. . .	6	7 49 26.36	3.418	16 8 35.1	9.21
48	5 Cancri. . .	6	7 53 55.36	3.428	16 49 10.7	9.52
49	8 Cancri. . .	6	7 57 39.92	3.351	13 29 41.5	9.90
50	μ ³ Cancri. . .	5	7 59 56.14	+3.543	+21 58 2.0	—10.04
51	12 Cancri. . .	6	8 1 16.37	3.361	14 1 31.6	10.17
52	γ ³ Cancri. . .	5.4	8 4 34.97	3.453	18 2 47.4	10.48
53	d ¹ Cancri. . .	6	8 15 41.77	3.448	18 45 25.2	11.20
54	29 Cancri. . .	6	8 21 12.01	3.358	14 38 54.6	11.66
55	θ Cancri. . .	6	8 24 0.61	+3.433	+18 32 30.5	—11.84
56	c ¹ Cancri. . .	6	8 29 52.80	3.257	10 7 0.2	12.20
57	39 Cancri. . .	6	8 32 27.10	3.461	—20 28 29.8	12.40
58	δ Cancri. . .	4	8 37 7.46	3.423	18 38 27.7	12.93
59	A ² Cancri. . .	6	8 39 38.47	3.296	12 35 45.0	12.92
60	α Cancri. . .	4	8 51 12.68	+3.291	+12 22 14.5	—13.66
61	κ CANCRI . .	5	9 0 32.47	3.256	11 12 5.2	14.22
62	π ³ Cancri. . .	6	9 7 53.14	3.323	15 29 30.8	14.64
63	α Leonis. . .	6	9 21 20.08	3.221	9 38 1.8	15.48
64	λ Leonis. . .	6	9 24 49.73	3.226	10 18 1.4	15.68
65	10 Leonis. . .	5.6	9 30 11.39	+3.174	+ 7 25 52.4	—15.90
66	ο Leonis. . .	4.3	9 34 3.32	3.226	10 29 44.7	16.18
67	B. A. C. 3336	5.6	9 39 9.07	3.169	7 19 18.0	16.38
68	π Leonis. . .	5	9 53 11.09	3.180	8 40 51.4	17.09
69	α LEONIS . .	1.2	10 1 17.22	3.204	12 36 58.0	17.41
70	43 Leonis. . .	6	10 16 2.90	+3.145	+ 7 13 0.9	—18.12
71	45 Leonis. . .	6	10 20 37.34	3.177	10 26 20.3	18.21
72	ρ LEONIS . .	4	10 25 48.42	3.167	9 59 23.4	18.41
73	34 Sextantis .	6	10 35 45.34	3.104	4 16 36.6	18.73
74	ι LEONIS . .	5	10 42 15.81	3.160	11 14 52.9	18.93
75	55 Leonis. . .	6	10 48 52.00	+3.092	+ 1 26 45.6	—19.09
76	d Leonis. . .	5	10 53 41.47	3.103	4 19 50.5	19.27
77	c Leonis. . .	5	10 53 51.16	3.118	6 48 54.5	19.26
78	χ Leonis. . .	5	10 58 9.35	3.102	8 3 14.3	19.41
79	ρ ² Leonis. . .	5	11 6 57.48	3.085	0 39 12.6	19.57
80	φ Leonis. . .	5.4	11 9 54.02	+3.053	— 2 55 30.9	—19.63
81	σ Leonis. . .	4	11 14 16.65	3.098	+ 6 45 27.4	19.68
82	79 Leonis. . .	6	11 17 12.86	3.084	+ 2 8 13.7	19.73
83	υ LEONIS . .	5.4	11 30 8.39	3.072	— 0 5 23.0	19.86
84	β Virginis . .	3.4	11 43 46.07	3.128	+ 2 30 50.1	20.29
85	10 Virginis . .	6	12 2 52.37	+3.074	+ 2 38 39.7	—20.28
86	η VIRGINIS .	3.4	12 13 6.14	3.068	+ 0 4 21.2	20.05
87	γ Virginis . .	6	12 26 55.03	3.092	— 8 43 4.5	19.89
88	f Virginis . .	6	12 29 56.51	+3.086	— 5 5 59.6	—19.97

MOON-CULMINATING STARS. 339

MEAN PLACES FOR 1867.6.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
89	χ Virginis . .	5	^h 12 ^m 32 ^s 23.35	+3.095	— 7° 15' 45.8	—19.90
90	γ Virginis . .	3.2	12 34 55.38	3.040	0 43 11.2	19.84
91	28 Virginis . .	6	12 35 5.28	3.100	6 46 3.1	19.84
92	38 Virginis . .	6	12 46 22.71	3.073	2 49 47.4	19.68
93	ψ Virginis . .	5	12 47 26.39	3.117	8 48 57.5	19.64
94	λ Virginis . .	6	13 52 48.66	+3.089	— 3 5 33.4	—19.49
95	48 Virginis . .	6	12 57 3.28	3.086	2 56 46.4	19.46
96	θ Virginis . .	4.5	13 3 3.98	3.100	4 49 41.6	19.34
97	α VIRGINIS . .	1	13 18 11.38	3.152	10 27 57.9	18.93
98	β Virginis . .	5	13 25 3.28	3.117	5 34 5.5	18.74
99	λ Virginis . .	5	13 25 57.96	+3.153	— 9 28 43.6	—18.70
100	m Virginis . .	6	13 34 38.04	3.142	8 1 52.2	18.36
101	83 Virginis . .	6	13 37 19.59	3.227	15 30 36.3	18.31
102	86 Virginis . .	6	13 38 51.31	3.188	11 45 32.3	18.22
103	89 Virginis . .	5	13 42 38.96	3.248	17 28 14.1	18.13
104	94 Virginis . .	6	13 59 15.42	+3.169	— 8 15 20.1	—17.38
105	κ Virginis . .	4.5	14 5 48.34	3.197	9 39 15.1	17.10
106	λ Virginis . .	5.4	14 11 55.06	3.239	12 45 26.9	16.80
107	2 Libræ . .	6	14 16 16.35	3.219	11 6 19.3	16.71
108	5 Libræ . .	6	14 38 37.98	3.299	11 53 51.3	15.47
109	α^2 LIBRÆ . .	2.3	14 43 31.48	+3.306	—15 29 13.1	—15.22
110	β^1 Libræ . .	5.4	15 4 38.75	3.410	19 17 10.0	13.91
111	γ^1 Libræ . .	4	15 20 45.65	3.376	16 15 2.3	12.88
112	γ Libræ . .	4.5	15 28 5.35	3.346	14 20 36.8	12.33
113	θ Libræ . .	5.4	15 46 15.46	3.412	16 20 11.5	10.92
114	δ SCORPII . .	2.3	15 52 28.38	+3.535	—22 14 25.7	—10.60
115	β^2 SCORPII . .	2	15 57 42.36	3.476	19 26 19.6	10.22
116	γ^2 Scorpii . .	4	16 4 16.18	3.480	19 6 43.8	9.68
117	σ Scorpii . .	3.4	16 13 6.51	3.636	25 16 14.0	9.02
118	ψ Ophiuchi . .	5	16 16 19.39	3.508	19 43 24.1	8.82
119	χ Ophiuchi . .	6	16 19 19.13	+3.470	—18 9 5.8	— 8.52
120	α SCORPII . .	1.3	16 21 15.41	3.668	26 8 1.3	8.40
121	ν Ophiuchi . .	5	16 24 15.40	3.548	21 10 45.9	8.06
122	B. A. C. 5579 .	5	16 33 53.02	3.462	17 28 54.1	7.33
123	20 Ophiuchi . .	5	16 42 28.70	3.313	10 32 41.6	6.73
124	29 Ophiuchi . .	6	16 54 4.52	+3.503	—18 41 9.2	— 5.68
125	η Ophiuchi . .	2.3	17 2 45.15	3.436	15 33 25.4	4.84
126	ν Serpentis . .	5.4	17 13 20.86	3.372	12 42 30.9	4.03
127	θ Ophiuchi . .	3.4	17 13 50.64	3.681	24 51 49.2	4.06
128	ξ Serpentis . .	4.3	17 29 58.31	3.434	15 18 48.0	2.67
129	\circ Serpentis . .	5.4	17 33 55.44	+3.369	—12 48 4.3	— 2.30
130	4 Sagittarii . .	5	17 51 40.35	3.661	23 48 1.7	— 0.74
131	μ SAGITTARI .	4	18 5 40.58	+3.586	—21 5 26.3	+ 0.60

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MEAN PLACES FOR 1867.0.

No.	Name.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
132	21 Sagittarii . .	5	^h 18 ^m 17 ^s 25.69	+3.574	—20° 36' 35.2"	+ 1.51
133	λ Sagittarii . .	3	18 19 45.77	3.707	25 29 32.6	1.50
134	B. A. C. 6279 . .	5.4	18 21 37.08	3.419	14 38 52.8	1.87
135	24 Sagittarii . .	6	18 25 46.09	3.667	24 7 39.5	2.25
136	ν Sagittarii . .	5	18 46 8.29	3.626	22 54 18.4	4.02
137	ξ ² Sagittarii . .	4	18 49 47.55	+3.582	—21 16 42.2	+ 4.33
138	ο Sagittarii . .	4	18 56 42.63	3.599	21 55 58.6	4.88
139	π Sagittarii . .	3	19 1 51.09	3.574	21 13 54.3	5.35
140	δ SAGITTARI . .	5	19 9 51.15	3.515	19 11 13.1	6.03
141	ρ ¹ Sagittarii . .	4	19 12 57.48	3.488	18 5 40.2	6.42
142	ν Sagittarii . .	5.4	19 14 6.58	+3.445	—16 12 8.1	+ 6.33
143	ε ² Sagittarii . .	5	19 34 54.57	3.438	16 25 56.6	8.11
144	f Sagittarii . .	5	19 38 36.11	3.506	20 4 39.7	8.34
145	γ Sagittarii . .	6.5	19 50 24.38	3.469	15 50 30.7	9.24
146	63 Sagittarii . .	6	19 54 31.46	3.366	14 0 7.0	9.68
147	ξ ² Capricorni . .	6	20 5 1.26	+3.350	—13 0 12.0	+10.25
148	α ² CAPRICORNI	3.4	20 10 40.37	3.334	12 57 16.8	10.83
149	ρ Capricorni . .	5	20 21 16.23	3.431	18 15 2.5	11.62
150	τ ² Capricorni . .	5	20 31 49.94	3.363	15 25 9.9	12.30
151	ε Aquarii . .	4.3	20 40 28.54	3.257	9 58 49.8	12.90
152	μ AQUARI . .	5.4	20 45 28.65	+3.241	— 9 28 49.1	+13.21
153	θ Capricorni . .	4	20 58 28.10	3.385	17 45 31.5	14.06
154	ν Aquarii . .	4.5	21 2 20.71	3.274	11 54 29.6	14.34
155	β AQUARI . .	3	21 24 33.34	3.164	6 9 16.9	15.62
156	ξ AQUARI . .	5.4	21 30 40.17	3.199	8 26 56.9	15.91
157	λ Capricorni . .	5.6	21 39 22.40	+3.238	—11 58 39.8	+16.41
158	θ AQUARI . .	4.5	22 9 48.83	3.171	8 26 39.8	17.75
159	ρ Aquarii . .	5.6	22 13 11.96	3.163	8 29 14.5	17.96
160	γ Aquarii . .	4.3	22 14 47.20	3.105	2 3 22.4	18.02
161	ζ Aquarii . .	3.4	22 21 58.93	3.091	0 41 57.2	18.30
162	σ Aquarii . .	5.4	22 23 36.32	+3.182	—11 21 24.9	+18.39
163	η AQUARI . .	4.3	22 28 31.27	3.084	0 48 7.5	18.42
164	κ Aquarii . .	5	22 30 52.01	3.113	4 54 46.9	18.47
165	78 Aquarii . .	6	22 47 38.66	3.129	— 7 54 33.8	19.08
166	β Piscium . .	5.4	22 57 6.64	3.057	+ 3 6 16.4	19.30
167	φ Aquarii . .	4.5	23 7 26.07	+3.113	— 6 45 55.2	+19.37
168	γ Piscium . .	4	23 10 16.22	3.110	+ 2 33 22.4	19.63
169	κ Piscium . .	5.4	23 20 6.95	3.079	0 31 40.2	19.65
170	ι PISCUM . .	4.5	23 33 6.65	3.084	4 54 20.1	19.47
171	19 Piscium . .	6	23 39 36.01	3.067	2 45 0.2	20.00
172	26 Piscium . .	6	23 48 19.72	+3.068	+ 6 19 56.4	+20.05
173	ο PISCUM . .	4	23 52 28.97	3.078	6 7 36.8	19.91
174	ε ² Piscium . .	6	23 55 42.06	+3.066	+ 7 44 49.6	+20.02

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Data.	JANUARY.			FEBRUARY.			MARCH.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
d									
1.0	14 45.6	54 3.3	-0.35	14 52.0	54 27.1	+0.72	14 55.8	54 41.0	+0.95
1.5	14 44.7	54 0.1	0.19	14 54.6	54 36.5	0.84	14 59.2	54 53.3	1.10
2.0	14 44.3	53 58.8	-0.03	14 57.5	54 47.3	0.94	15 3.0	55 7.3	1.23
2.5	14 44.4	53 59.3	+0.11	15 0.8	54 59.2	1.03	15 7.3	55 22.9	1.35
3.0	14 45.1	54 1.4	0.24	15 4.3	55 12.1	1.10	15 11.8	55 39.7	1.44
3.5	14 46.1	54 5.1	0.36	15 8.0	55 25.7	1.16	15 16.6	55 57.4	1.50
4.0	14 47.5	54 10.2	0.47	15 11.9	55 39.9	1.19	15 21.6	56 15.8	1.54
4.5	14 49.2	54 16.4	0.57	15 15.8	55 54.3	1.22	15 26.7	56 34.4	1.55
5.0	14 51.2	54 23.9	0.67	15 19.8	56 9.1	1.23	15 31.8	56 53.0	1.53
5.5	14 53.4	54 32.4	0.75	15 23.8	56 23.9	1.23	15 36.7	57 11.2	1.49
6.0	14 56.0	54 41.9	0.83	15 27.8	56 38.6	1.23	15 41.5	57 28.7	1.42
6.5	14 58.9	54 52.4	0.90	15 31.8	56 53.4	1.22	15 46.0	57 45.3	1.33
7.0	15 2.0	55 3.6	0.97	15 35.8	57 7.9	1.21	15 50.2	58 0.7	1.22
7.5	15 5.3	55 15.7	1.05	15 39.7	57 22.3	1.19	15 54.1	58 14.8	1.12
8.0	15 8.9	55 28.9	1.13	15 43.6	57 36.4	1.17	15 57.5	58 27.5	1.00
8.5	15 12.7	55 42.9	1.20	15 47.4	57 50.3	1.14	16 0.5	58 38.7	0.86
9.0	15 16.7	55 57.7	1.27	15 51.0	58 3.8	1.12	16 3.1	58 48.2	0.73
9.5	15 21.0	56 13.5	1.35	15 54.6	58 17.1	1.09	16 5.4	58 56.2	0.61
10.0	15 25.5	56 30.1	1.42	15 58.2	58 30.1	1.06	16 7.1	59 2.8	0.49
10.5	15 30.3	56 47.6	1.49	16 1.6	58 42.6	1.02	16 8.4	59 7.9	0.36
11.0	15 35.3	57 5.9	1.56	16 4.9	58 54.6	0.97	16 9.4	59 11.5	0.25
11.5	15 40.4	57 25.1	1.62	16 8.0	59 5.8	0.90	16 10.1	59 13.9	0.14
12.0	15 45.8	57 44.9	1.67	16 10.8	59 16.2	0.82	16 10.4	59 15.0	+0.04
12.5	15 51.4	58 5.2	1.70	16 13.3	59 25.5	0.72	16 10.4	59 15.0	-0.05
13.0	15 57.0	58 25.8	1.72	16 15.5	59 33.4	0.69	16 10.1	59 13.8	0.14
13.5	16 2.6	58 46.5	1.71	16 17.2	59 39.7	0.45	16 9.5	59 11.5	0.24
14.0	16 8.2	59 6.8	1.67	16 18.4	59 44.2	0.29	16 8.6	59 8.1	0.33
14.5	16 13.6	59 26.5	1.59	16 19.0	59 46.6	+0.10	16 7.3	59 3.5	0.44
15.0	16 18.6	59 44.9	1.46	16 19.0	59 46.5	-0.11	16 5.7	58 57.6	0.54
15.5	16 23.2	60 1.6	1.30	16 18.3	59 43.8	0.34	16 3.7	58 50.5	0.64
16.0	16 27.1	60 16.1	1.09	16 16.8	59 38.3	0.57	16 1.5	58 42.1	0.75
16.5	16 30.2	60 27.9	0.85	16 14.5	59 30.0	0.80	15 58.8	58 32.4	0.87
17.0	16 32.6	60 36.5	0.57	16 11.5	59 19.0	1.03	15 55.8	58 21.3	0.98
17.5	16 34.0	60 41.5	+0.25	16 7.8	59 5.2	1.25	15 52.4	58 8.9	1.09
18.0	16 34.3	60 42.5	-0.08	16 3.4	58 49.0	1.43	15 48.7	57 55.2	1.19
18.5	16 33.5	60 39.5	0.42	15 58.5	58 30.8	1.59	15 44.6	57 40.3	1.28
19.0	16 31.5	60 32.3	0.77	15 53.1	58 10.9	1.71	15 40.3	57 24.4	1.36
19.5	16 28.4	60 21.0	1.10	15 47.2	57 49.7	1.80	15 35.8	57 7.6	1.42
20.0	16 24.3	60 5.9	1.40	15 41.2	57 27.6	1.87	15 31.1	56 50.3	1.46
20.5	16 19.2	59 47.4	1.66	15 35.1	57 4.9	1.89	15 26.2	56 32.6	1.48
21.0	16 13.4	59 26.0	1.88	15 28.9	56 42.2	1.87	15 21.3	56 14.7	1.48
21.5	16 6.9	59 2.3	2.05	15 22.7	56 19.9	1.82	15 16.5	55 57.1	1.45
22.0	16 0.0	58 36.8	2.17	15 16.9	55 58.6	1.73	15 11.8	55 39.9	1.40
22.5	15 52.8	58 10.1	2.24	15 11.4	55 38.4	1.62	15 7.4	55 23.6	1.31
23.0	15 45.3	57 42.9	2.27	15 6.3	55 19.8	1.47	15 3.3	55 8.4	1.21
23.5	15 37.9	57 15.7	2.24	15 1.8	55 3.1	1.30	14 59.6	54 54.6	1.08
24.0	15 30.7	56 49.1	2.17	14 57.9	54 48.6	1.12	14 56.2	54 42.4	0.94
24.5	15 23.8	56 23.6	2.06	14 54.5	54 36.3	0.92	14 53.4	54 32.1	0.77
25.0	15 17.2	55 59.6	1.92	14 51.8	54 26.5	0.71	14 51.1	54 23.9	0.59
25.5	15 11.2	55 37.4	1.75	14 49.9	54 19.3	0.49	14 49.5	54 17.9	0.40
26.0	15 5.7	55 17.5	1.57	14 48.7	54 14.7	0.27	14 48.6	54 14.3	-0.20
26.5	15 0.9	54 59.8	1.37	14 48.1	54 12.7	-0.05	14 48.3	54 13.2	+0.02
27.0	14 56.8	54 44.5	1.17	14 48.3	54 13.4	+0.17	14 48.7	54 14.7	0.23
27.5	14 53.3	54 31.8	0.95	14 49.2	54 16.7	0.38	14 49.8	54 18.7	0.44
28.0	14 50.5	54 21.6	0.74	14 50.8	54 22.5	0.58	14 51.6	54 25.4	0.67
28.5	14 48.5	54 14.1	0.52	14 53.0	54 30.6	0.77	14 54.1	54 34.7	0.88
29.0	14 47.1	54 9.1	0.31	14 55.8	54 41.0	0.95	14 57.3	54 46.5	1.08
29.5	14 46.5	54 6.6	-0.11	14 59.2	54 53.3	1.10	15 1.1	55 0.6	1.27
30.0	14 46.5	54 6.5	+0.08	15 3.0	55 7.3	1.23	15 5.6	55 17.0	1.44
30.5	14 47.0	54 8.6	0.27	15 7.3	55 22.9	1.35	15 10.6	55 35.3	1.60
31.0	14 48.1	54 12.9	0.44	15 11.8	55 39.7	1.44	15 16.1	55 55.4	1.73
31.5	14 49.8	54 19.1	+0.59	15 16.6	55 57.4	+1.50	15 21.9	56 16.9	+1.84

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	APRIL.			MAY.			JUNE.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	15 28.0	56 30.5	+1.91	15 58.9	56 32.8	+2.18	16 37.4	60 54.1	+1.10
1.5	15 34.3	57 2.6	1.93	16 5.8	58 58.6	2.08	16 40.7	61 6.3	0.83
2.0	15 40.7	57 25.8	1.92	16 12.5	59 22.6	1.92	16 42.8	61 13.9	0.43
2.5	15 47.0	57 48.8	1.88	16 18.5	59 44.5	1.71	16 43.5	61 16.6	+0.03
3.0	15 53.0	58 11.0	1.80	16 23.7	60 3.6	1.45	16 43.0	61 14.5	-0.37
3.5	15 58.6	58 31.9	1.67	16 28.0	60 19.4	1.16	16 41.1	61 7.7	0.75
4.0	16 3.8	58 51.1	1.52	16 31.3	60 31.5	0.84	16 38.0	60 56.4	1.10
4.5	16 8.6	59 8.3	1.33	16 33.5	60 39.7	0.51	16 33.9	60 41.1	1.41
5.0	16 12.6	59 23.0	1.11	16 34.6	60 43.7	+0.17	16 28.8	60 22.4	1.67
5.5	16 15.9	59 36.0	0.88	16 34.5	60 43.6	-0.17	16 22.9	60 0.8	1.88
6.0	16 18.4	59 44.1	0.64	16 33.4	60 39.6	0.40	16 16.4	59 37.1	2.04
6.5	16 20.0	59 50.3	0.39	16 31.3	60 31.8	0.78	16 9.6	59 12.0	2.13
7.0	16 20.9	59 53.5	+0.15	16 28.3	60 20.7	1.04	16 2.5	58 45.9	2.18
7.5	16 21.1	59 54.0	-0.07	16 24.5	60 6.8	1.26	15 55.3	58 19.4	2.19
8.0	16 20.5	59 51.9	0.27	16 20.1	59 50.4	1.44	15 48.2	57 53.2	2.16
8.5	16 19.3	59 47.4	0.47	16 15.1	59 32.1	1.57	15 41.3	57 27.7	2.00
9.0	16 17.5	59 40.7	0.63	16 9.7	59 12.4	1.67	15 34.5	57 3.1	2.00
9.5	16 15.1	59 32.2	0.77	16 4.1	58 51.9	1.73	15 28.2	56 39.8	1.88
10.0	16 12.3	59 22.1	0.89	15 58.4	58 30.9	1.75	15 22.2	56 17.9	1.70
10.5	16 9.2	59 10.8	0.98	15 52.7	58 9.8	1.75	15 16.7	55 57.5	1.63
11.0	16 5.9	58 58.5	1.05	15 47.0	57 48.9	1.72	15 11.6	55 38.8	1.49
11.5	16 2.4	58 45.5	1.10	15 41.4	57 28.4	1.68	15 6.9	55 21.7	1.35
12.0	15 58.7	58 31.9	1.14	15 36.0	57 8.6	1.62	15 2.7	55 6.3	1.28
12.5	15 54.9	58 17.9	1.18	15 30.8	56 49.6	1.55	14 59.0	54 52.6	1.09
13.0	15 51.0	58 3.6	1.20	15 25.9	56 31.4	1.48	14 55.7	54 40.5	0.94
13.5	15 47.1	57 40.1	1.22	15 21.2	56 14.1	1.40	14 52.8	54 30.1	0.80
14.0	15 43.1	57 34.4	1.23	15 16.7	55 57.8	1.32	14 50.4	54 21.2	0.68
14.5	15 39.1	57 19.6	1.23	15 12.6	55 42.5	1.24	14 48.4	54 13.8	0.56
15.0	15 35.0	57 4.8	1.24	15 8.7	55 28.2	1.15	14 46.8	54 7.8	0.44
15.5	15 31.0	56 49.9	1.24	15 5.1	55 14.9	1.07	14 45.5	54 2.2	0.32
16.0	15 26.9	56 35.0	1.24	15 1.7	55 2.6	0.99	14 44.7	54 0.0	0.22
16.5	15 22.9	56 20.2	1.23	14 58.6	54 51.3	0.90	14 44.1	53 58.1	-0.10
17.0	15 18.8	56 5.5	1.21	14 55.8	54 41.0	0.82	14 44.0	53 57.5	+0.01
17.5	15 14.9	55 51.1	1.19	14 53.3	54 31.7	0.73	14 44.2	53 58.2	0.12
18.0	15 11.1	55 37.0	1.16	14 51.1	54 23.5	0.64	14 44.7	54 0.3	0.23
18.5	15 7.3	55 23.3	1.12	14 49.1	54 16.4	0.54	14 45.2	54 3.8	0.26
19.0	15 3.8	55 10.2	1.06	14 47.5	54 10.5	0.44	14 47.1	54 8.9	0.40
19.5	15 0.4	54 57.9	0.99	14 46.3	54 5.9	0.33	14 48.9	54 18.6	0.62
20.0	14 57.3	54 46.5	0.90	14 45.4	54 2.7	0.21	14 51.1	54 29.7	0.76
20.5	14 54.6	54 36.2	0.80	14 44.9	54 1.0	-0.07	14 53.8	54 33.7	0.90
21.0	14 52.1	54 27.2	0.69	14 44.9	54 0.9	+0.07	14 57.1	54 48.5	1.06
21.5	14 50.0	54 19.7	0.56	14 45.4	54 2.6	0.22	15 0.8	54 50.1	1.22
22.0	14 48.4	54 13.8	0.41	14 46.4	54 6.3	0.32	15 8.0	55 14.7	1.37
22.5	14 47.3	54 9.8	0.24	14 47.9	54 11.9	0.54	15 9.7	55 32.1	1.52
23.0	14 46.8	54 7.9	-0.07	14 50.0	54 19.6	0.73	15 15.0	55 51.4	1.69
23.5	14 46.9	54 8.1	+0.11	14 52.7	54 29.5	0.92	15 20.7	56 12.5	1.83
24.0	14 47.6	54 10.5	0.30	14 56.0	54 41.7	1.11	15 26.9	56 35.3	1.96
24.5	14 48.9	54 15.4	0.51	14 59.9	54 56.1	1.30	15 33.6	56 59.6	2.09
25.0	14 50.9	54 22.7	0.71	15 4.5	55 12.8	1.49	15 40.6	57 25.3	2.16
25.5	14 53.5	54 32.5	0.92	15 9.7	55 31.8	1.62	15 47.9	57 52.1	2.25
26.0	14 56.8	54 44.9	1.12	15 15.4	55 53.0	1.84	15 55.3	58 19.4	2.29
26.5	15 0.9	54 59.5	1.32	15 21.7	56 16.1	2.00	16 2.8	58 47.0	2.29
27.0	15 5.6	55 16.7	1.52	15 28.5	56 41.1	2.14	16 10.2	59 14.3	2.29
27.5	15 10.8	55 36.2	1.71	15 35.7	57 7.6	2.26	16 17.4	59 40.6	2.19
28.0	15 16.7	55 57.7	1.87	15 43.3	57 38.4	2.32	16 24.1	60 5.2	1.95
28.5	15 23.1	56 21.1	2.01	15 51.1	58 3.9	2.39	16 30.1	60 27.4	1.70
29.0	15 29.9	56 46.0	2.13	15 58.9	58 32.7	2.38	16 35.4	60 46.6	1.44
29.5	15 37.8	57 12.2	2.21	16 6.7	59 1.1	2.32	16 39.6	61 2.1	1.11
30.0	15 44.3	57 39.1	2.25	16 14.1	59 28.5	2.21	16 42.7	61 13.4	0.75
30.5	15 51.7	58 6.2	2.24	16 21.1	59 54.2	2.04	16 44.5	61 29.1	+0.25
31.0	15 58.9	58 32.8	2.18	16 27.4	60 17.3	1.80	16 45.0	61 21.8	-0.05
31.5	16 5.9	58 58.6	+2.03	16 32.9	60 37.6	+1.59	16 44.1	61 18.6	-0.47

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	JULY.			AUGUST.			SEPTEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	16 45.0	61 21.8	-0.05	16 21.5	59 55.5	-1.79	15 37.2	57 12.9	-2.06
1.5	16 44.1	61 18.6	0.47	16 15.2	59 32.4	2.00	15 30.5	56 48.3	2.02
2.0	16 41.9	61 10.5	0.87	16 8.3	59 7.2	2.16	15 24.0	56 24.4	1.94
2.5	16 38.4	60 57.7	1.23	16 1.0	58 40.4	2.26	15 17.8	56 1.7	1.83
3.0	16 33.8	60 40.7	1.56	15 53.5	58 12.7	2.31	15 12.0	55 40.6	1.68
3.5	16 28.2	60 20.1	1.84	15 45.9	57 44.8	2.31	15 6.8	55 21.3	1.52
4.0	16 21.7	59 56.4	2.06	15 38.3	57 17.1	2.26	15 2.1	55 4.1	1.34
4.5	16 14.6	59 30.4	2.22	15 31.0	56 50.3	2.17	14 58.1	54 49.2	1.15
5.0	16 7.1	59 2.9	2.32	15 24.1	56 24.8	2.06	14 54.7	54 36.7	0.94
5.5	15 50.4	58 34.5	2.37	15 17.6	56 0.9	1.92	14 51.9	54 26.7	0.72
6.0	15 51.6	58 5.8	2.37	15 11.6	55 38.9	1.74	14 49.0	54 19.3	0.51
6.5	15 43.9	57 37.5	2.33	15 6.2	55 19.0	1.56	14 48.6	54 14.4	-0.30
7.0	15 36.4	57 9.9	2.24	15 1.4	55 1.4	1.37	14 48.0	54 12.1	-0.09
7.5	15 29.2	56 43.6	2.13	14 57.2	54 46.2	1.17	14 48.0	54 12.3	+0.11
8.0	15 22.5	56 18.9	1.99	14 53.8	54 33.4	0.97	14 48.7	54 14.9	0.30
8.5	15 16.2	55 55.9	1.83	14 50.9	54 23.0	0.77	14 50.0	54 19.6	0.49
9.0	15 10.5	55 34.9	1.66	14 48.7	54 15.0	0.57	14 51.9	54 26.6	0.66
9.5	15 5.4	55 16.0	1.49	14 47.2	54 9.4	0.37	14 54.3	54 35.5	0.81
10.0	15 0.8	54 59.2	1.31	14 46.3	54 6.0	0.20	14 57.2	54 46.1	0.94
10.5	14 56.8	54 44.6	1.13	14 46.0	54 4.9	-0.02	15 0.5	54 58.2	1.06
11.0	14 53.4	54 32.1	0.95	14 46.2	54 5.7	+0.14	15 4.1	55 11.6	1.16
11.5	14 50.6	54 21.7	0.78	14 47.0	54 8.5	0.30	15 8.1	55 26.0	1.23
12.0	14 48.3	54 13.4	0.61	14 48.2	54 13.0	0.43	15 12.2	55 41.3	1.29
12.5	14 46.6	54 7.1	0.45	14 49.9	54 19.1	0.56	15 16.5	56 57.0	1.32
13.0	14 45.4	54 2.6	0.30	14 51.9	54 26.5	0.67	15 20.9	56 13.1	1.34
13.5	14 44.6	53 59.9	0.16	14 54.3	54 35.3	0.77	15 25.3	56 29.2	1.34
14.0	14 44.4	53 58.9	-0.03	14 56.9	54 45.1	0.85	15 20.6	56 45.2	1.32
14.5	14 44.5	53 59.4	+0.10	14 59.9	54 55.9	0.93	15 33.9	57 1.0	1.29
15.0	14 45.0	54 1.4	0.22	15 3.1	55 7.6	1.00	15 38.1	57 16.2	1.25
15.5	14 45.9	54 4.7	0.33	15 6.4	55 20.0	1.06	15 42.1	57 30.9	1.19
16.0	14 47.2	54 9.3	0.43	15 10.0	55 33.2	1.11	15 45.9	57 44.9	1.14
16.5	14 48.8	54 15.1	0.53	15 13.8	55 46.8	1.16	15 49.5	57 58.2	1.08
17.0	14 50.7	54 22.2	0.63	15 17.6	56 1.0	1.21	15 52.9	58 10.7	1.01
17.5	14 52.9	54 30.4	0.73	15 21.6	56 15.8	1.25	15 56.1	58 22.3	0.94
18.0	14 55.5	54 39.8	0.83	15 25.8	56 31.0	1.28	15 59.0	58 33.2	0.87
18.5	14 58.4	54 50.4	0.93	15 30.0	56 46.6	1.31	16 1.7	58 43.1	0.80
19.0	15 1.6	55 2.3	1.04	15 34.4	57 2.5	1.34	16 4.2	58 52.2	0.72
19.5	15 5.2	55 15.3	1.15	15 38.8	57 18.9	1.37	16 6.5	59 0.4	0.65
20.0	15 9.1	55 29.7	1.25	15 43.3	57 35.5	1.39	16 8.4	59 7.7	0.56
20.5	15 13.4	55 45.4	1.36	15 47.9	57 52.3	1.40	16 10.1	59 13.9	0.47
21.0	15 18.0	56 2.4	1.46	15 52.5	58 9.3	1.41	16 11.5	59 19.0	0.37
21.5	15 22.9	56 20.5	1.56	15 57.1	58 26.2	1.40	16 12.6	59 22.8	0.26
22.0	15 28.2	56 39.9	1.66	16 1.7	58 42.9	1.37	16 13.2	59 25.3	0.15
22.5	15 33.8	57 0.4	1.75	16 6.1	58 59.1	1.33	16 13.5	59 26.3	+0.01
23.0	15 39.6	57 21.9	1.83	16 10.4	59 14.7	1.25	16 13.3	59 25.6	-0.13
23.5	15 45.6	57 44.3	1.89	16 14.3	59 29.2	1.15	16 12.6	59 23.1	0.29
24.0	15 52.0	58 7.3	1.93	16 17.9	59 42.4	1.03	16 11.4	59 18.5	0.46
24.5	15 58.4	58 30.7	1.94	16 21.0	59 53.8	0.86	16 9.6	59 12.0	0.64
25.0	16 4.7	58 54.0	1.92	16 23.5	60 3.1	0.66	16 7.2	59 3.2	0.81
25.5	16 10.9	59 16.9	1.86	16 25.4	60 9.8	0.44	16 4.3	58 52.4	0.98
26.0	16 16.9	59 38.8	1.76	16 26.4	60 13.6	+0.19	16 0.8	58 39.6	1.14
26.5	16 22.5	59 59.2	1.60	16 26.4	60 14.4	-0.08	15 56.8	58 24.8	1.30
27.0	16 27.4	60 17.4	1.40	16 25.9	60 11.8	0.36	15 52.2	58 8.3	1.43
27.5	16 31.6	60 32.9	1.16	16 24.3	60 5.8	0.64	15 47.4	57 50.4	1.54
28.0	16 35.0	60 45.9	0.87	16 21.7	59 56.4	0.91	15 42.2	57 31.3	1.62
28.5	16 37.3	60 53.8	0.55	16 18.3	59 43.8	1.17	15 36.7	57 11.3	1.68
29.0	16 38.5	60 58.3	+0.20	16 14.0	59 28.1	1.41	15 31.2	56 50.9	1.70
29.5	16 38.6	60 58.4	-0.16	16 9.0	59 9.6	1.63	15 25.6	56 30.5	1.69
30.0	16 37.4	60 54.2	0.53	16 3.3	58 48.9	1.80	15 20.1	56 10.3	1.65
30.5	16 35.1	60 45.5	0.90	15 57.2	58 26.3	1.93	15 14.8	55 50.8	1.58
31.0	16 31.6	60 32.5	1.23	15 50.7	58 2.4	2.01	15 9.8	55 32.4	1.48
31.5	16 27.0	60 15.7	-1.54	15 44.0	57 37.8	-2.06	15 5.2	55 15.3	-1.35

FOR WASHINGTON MEAN NOON AND MIDNIGHT.

Date.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.	Semi-diameter.	Horizontal Parallax.	Hourly Diff.
1.0	15 9.8	55 32.4	-1.48	14 48.3	54 13.5	-0.34	14 47.4	54 10.1	+0.50
1.5	15 5.2	55 15.3	1.35	14 47.5	54 10.5	-0.15	14 49.4	54 17.3	0.70
2.0	15 1.0	55 0.0	1.21	14 47.4	54 10.0	+0.08	14 52.0	54 26.9	0.90
2.5	14 57.3	54 46.5	1.03	14 47.9	54 11.9	0.26	14 55.3	54 39.0	1.11
3.0	14 54.2	54 35.2	0.85	14 49.2	54 16.5	0.48	14 59.2	54 53.6	1.31
3.5	14 51.8	54 26.2	0.65	14 51.1	54 23.7	0.70	15 3.9	55 10.6	1.51
4.0	14 50.0	54 19.6	0.45	14 53.8	54 33.5	0.91	15 9.2	55 30.1	1.71
4.5	14 48.9	54 15.6	0.23	14 57.1	54 45.8	1.12	15 15.1	55 51.8	1.89
5.0	14 48.6	54 14.3	-0.01	15 1.2	55 0.6	1.33	15 21.6	56 15.6	2.06
5.5	14 48.9	54 15.5	+0.21	15 5.9	55 17.8	1.52	15 28.6	56 41.2	2.20
6.0	14 49.9	54 19.3	0.43	15 11.1	55 37.2	1.69	15 36.0	57 8.4	2.30
6.5	14 51.7	54 25.8	0.63	15 16.9	55 58.5	1.83	15 43.7	57 36.7	2.37
7.0	14 54.1	54 34.6	0.83	15 23.2	56 21.4	1.96	15 51.5	58 5.5	2.40
7.5	14 57.1	54 45.8	1.03	15 29.7	56 45.6	2.05	15 59.3	58 34.3	2.37
8.0	15 0.8	54 59.2	1.19	15 36.6	57 10.6	2.10	16 7.0	59 2.5	2.29
8.5	15 4.9	55 14.5	1.34	15 43.5	57 36.0	2.11	16 14.3	59 29.4	2.16
9.0	15 9.6	55 31.5	1.47	15 50.4	58 1.3	2.08	16 21.1	59 54.3	1.96
9.5	15 14.6	55 50.0	1.58	15 57.1	58 25.9	1.99	16 27.1	60 16.4	1.70
10.0	15 19.9	56 9.5	1.66	16 3.4	58 49.2	1.87	16 32.2	60 35.1	1.40
10.5	15 25.4	56 29.7	1.70	16 9.3	59 10.8	1.70	16 36.3	60 50.0	1.06
11.0	15 31.0	56 50.2	1.71	16 14.5	59 30.0	1.48	16 39.2	61 0.6	0.70
11.5	15 36.6	57 10.7	1.69	16 19.0	59 46.5	1.24	16 40.8	61 6.6	+0.31
12.0	15 42.1	57 30.8	1.64	16 22.7	59 59.9	0.97	16 41.1	61 7.8	-0.08
12.5	15 47.3	57 50.1	1.56	16 25.4	60 9.8	0.69	16 40.2	61 4.3	0.46
13.0	15 52.3	58 8.3	1.45	16 27.1	60 16.2	0.39	16 38.1	60 56.5	0.82
13.5	15 56.8	58 25.0	1.32	16 27.9	60 19.1	+0.10	16 34.8	60 44.5	1.14
14.0	16 0.9	58 40.0	1.17	16 27.7	60 18.5	-0.19	16 30.5	60 28.9	1.41
14.5	16 4.4	58 53.0	1.00	16 26.6	60 14.5	0.45	16 25.6	60 10.3	1.64
15.0	16 7.4	59 4.0	0.82	16 24.7	60 7.5	0.68	16 19.8	59 49.3	1.82
15.5	16 9.8	59 12.8	0.64	16 22.1	59 57.9	0.89	16 13.6	59 26.5	1.94
16.0	16 11.6	59 19.4	0.47	16 18.8	59 46.1	1.06	16 7.0	59 2.5	2.01
16.5	16 12.8	59 23.9	0.30	16 15.1	59 32.3	1.20	16 0.4	58 38.0	2.04
17.0	16 13.5	59 26.4	+0.14	16 11.0	59 17.0	1.30	15 53.7	58 13.5	2.03
17.5	16 13.7	59 27.0	-0.02	16 6.6	59 0.8	1.37	15 47.1	57 49.3	1.99
18.0	16 13.4	59 25.9	0.15	16 2.0	58 43.9	1.42	15 40.7	57 25.7	1.92
18.5	16 12.6	59 23.2	0.28	15 57.3	58 26.7	1.44	15 34.5	57 3.1	1.83
19.0	16 11.5	59 19.1	0.39	15 52.5	58 9.3	1.45	15 28.7	56 41.7	1.73
19.5	16 10.1	59 13.8	0.49	15 47.8	57 52.0	1.43	15 23.2	56 21.6	1.62
20.0	16 8.4	59 7.4	0.57	15 43.2	57 34.9	1.41	15 18.1	56 2.8	1.51
20.5	16 6.3	59 0.0	0.65	15 38.6	57 18.1	1.38	15 13.4	55 45.4	1.39
21.0	16 4.1	58 51.8	0.72	15 34.1	57 1.7	1.35	15 9.0	55 29.4	1.28
21.5	16 1.6	58 42.7	0.79	15 29.8	56 45.8	1.32	15 5.0	55 14.8	1.16
22.0	15 58.9	58 32.7	0.86	15 25.6	56 30.3	1.27	15 1.4	55 1.5	1.05
22.5	15 56.0	58 22.0	0.93	15 21.5	56 15.2	1.23	14 58.1	54 49.5	0.95
23.0	15 52.8	58 10.4	1.00	15 17.5	56 0.6	1.19	14 55.2	54 38.8	0.85
23.5	15 49.5	57 58.1	1.05	15 13.7	55 46.5	1.15	14 52.6	54 29.3	0.74
24.0	15 45.9	57 45.0	1.12	15 10.0	55 33.0	1.11	14 50.3	54 21.0	0.63
24.5	15 42.2	57 31.2	1.18	15 6.4	55 20.0	1.06	14 48.4	54 13.9	0.54
25.0	15 38.2	57 16.6	1.23	15 3.1	55 7.6	1.01	14 46.8	54 8.0	0.45
25.5	15 34.1	57 1.5	1.28	14 59.9	54 55.9	0.94	14 45.5	54 3.2	0.35
26.0	15 29.8	56 45.9	1.31	14 56.9	54 45.0	0.87	14 44.6	53 59.7	0.25
26.5	15 25.5	56 29.9	1.33	14 54.2	54 35.1	0.79	14 44.0	53 57.4	0.15
27.0	15 21.1	56 13.8	1.34	14 51.8	54 26.1	0.70	14 43.7	53 56.4	-0.02
27.5	15 16.7	55 57.8	1.32	14 49.7	54 18.4	0.59	14 43.8	53 56.9	+0.10
28.0	15 12.4	55 42.0	1.29	14 47.9	54 12.0	0.48	14 44.3	53 58.9	0.23
28.5	15 8.3	55 26.7	1.24	14 46.6	54 7.0	0.34	14 45.3	54 2.5	0.37
29.0	15 4.3	55 12.1	1.18	14 45.7	54 3.7	0.20	14 46.8	54 7.9	0.52
29.5	15 0.6	54 58.5	1.08	14 45.3	54 2.2	-0.05	14 48.8	54 15.1	0.68
30.0	14 57.2	54 46.1	0.97	14 45.4	54 2.7	+0.12	14 51.3	54 24.3	0.85
30.5	14 54.2	54 35.2	0.84	14 46.1	54 5.2	0.31	14 54.4	54 35.5	1.02
31.0	14 51.7	54 26.0	0.69	14 47.4	54 10.1	0.50	14 58.0	54 48.8	1.19
31.5	14 49.8	54 18.7	-0.52	14 49.4	54 17.3	+0.70	15 2.2	55 4.3	+1.37

WASHINGTON MEAN TIME.

PHASES.

Month.	New Moon.	First Quarter.	Full Moon.	Last Quarter.	New Moon.
	d h m	d h m	d h m	d h m	d h m
January	5 7 21.7	12 23 25.8	19 14 27.7	26 21 39.1	
February	4 1 7.5	11 8 32.1	18 2 32.9	25 18 24.0	
March	5 16 29.9	12 15 39.1	19 13 47.9	27 14 37.7	
April	4 4 55.8	10 22 0.9	18 5 57.8	26 8 52.7	
May	3 14 32.1	10 4 56.1	17 20 44.0	26 0 13.7	
June	1 22 4.3	8 13 29.1	16 11 46.2	24 12 20.8	
July	1 4 40.2	8 0 23.3	16 2 47.6	23 21 27.8	30 11 34.9
August		6 14 0.4	14 17 29.1	22 4 14.2	28 19 56.5
September		5 6 22.9	13 7 25.0	20 9 30.8	27 6 33.8
October		5 1 8.9	12 20 16.1	19 16 8.7	26 19 54.7
November		3 21 19.1	11 8 1.5	17 23 57.7	25 12 2.7
December		3 17 12.4	10 19 1.8	17 10 26.2	25 6 30.8

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Month.	Apogee.	Perigee.	Apogee.	GREATEST LIBRATION.			
	d h	d h	d h	d h m	d h m	d h m	
January	2 3.0	17 21.2	29 18.7	11 2 23 N.E.	23 15 22 S.W.		
February		14 17.6	26 14.7	6 17 26 N.E.	20 13 49 S.W.		
March		12 5.7	26 11.5	5 2 28 N.E.	19 19 48 S.W.		
April		7 8.2	23 5.0	1 12 4 N.E.	15 2 33 S.W.	29 10 21 N.E.	
May		5 5.7	20 18.4		11 23 30 N.W.	27 13 54 N.E.	
June		2 12.8	16 23.6		8 19 20 N.W.	24 18 16 N.E.	
July		0 22.3	14 1.9		6 22 50 N.W.	22 17 40 N.E.	
July		29 6.4					
August	10 12.9	26 8.6			4 3 12 N.W.	19 2 1 N.E.	
September	7 5.3	22 13.1		1 3 45 N.W.	14 8 58 N.E.	28 19 21 N.W.	
October	5 0.4	17 10.0			11 5 3 N.E.	25 15 32 N.W.	
November	1 20.7	13 15.8	29 15.2		7 21 33 N.E.	20 20 41 N.W.	
December		11 21.1	27 1.9		6 1 5 N.E.	18 7 1 N.W.	

MOON'S EQUATOR.

The moon's libration in latitude and longitude, at any time, may be found by means of the following formulas and tables.

I = the inclination to the ecliptic of the moon's equator = $1^{\circ} 28'.8$,

Ω = mean longitude of the moon's ascending node (see page 250),

= mean longitude of the descending node of the moon's equator.

C = the angle at the centre of the moon's disc made by a meridian of the moon with the circle of declination, reckoned from north to east on the apparent disc.

i , Δ , Ω' , and \mathcal{C} are defined on the next page, where their values for the year are given.

λ , β , α' , and δ' the apparent longitude, latitude, right ascension, and declination of the moon affected with parallax.

λ' = the selenocentric longitude of the earth, reckoned on the moon's equator from its descending node.

$$\left. \begin{aligned} \Delta \lambda &= -0'.57 \sin 2(\Omega - \lambda) \\ \alpha &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta \lambda + \alpha b \end{aligned} \right\} \text{See table, p. 6 of the Appendix.}$$

The libration in latitude = $b = B - \beta$,

" " longitude = $l = \lambda' - \mathcal{C}$.

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(\alpha' - \Omega)}{\cos b}.$$

WASHINGTON MEAN TIME.

MOON'S EQUATOR				☾ Moon's Mean Longitude.	Mean Solar Days.	Motion of ☾.
Mean Noon.	Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	Ω' Ascending Node on Earth's Equator.			
Jan. 0	24° 56.4	357° 34.3	359° 50.5	218° 8.6	0.1	1° 19.06
10	24 56.3	357 4.3	359 48.6	349 54.4	0.2	2 38.12
20	24 56.2	356 34.3	359 46.6	121 40.3	0.3	3 57.18
30	24 56.1	356 4.3	359 44.7	253 26.1	0.4	5 16.23
Feb. 9	24 56.0	355 34.3	359 42.7	25 12.0	0.5	6 35.29
19	24 55.9	355 4.3	359 40.8	156 57.8	0.6	7 54.35
March 1	24 55.8	354 34.3	359 38.9	288 43.7	0.7	9 13.41
11	24 55.7	354 4.3	359 37.0	60 29.5	0.8	10 32.47
21	24 55.6	353 34.3	359 35.0	192 15.4	0.9	11 51.53
31	24 55.5	353 4.3	359 33.1	324 1.2		
April 10	24 55.4	352 34.3	359 31.2	95 47.1	1.0	13 10.58
20	24 55.3	352 4.3	359 29.3	227 32.9	2.0	26 21.17
30	24 55.2	351 34.3	359 27.3	359 18.8	3.0	39 31.75
May 10	24 55.0	351 4.2	359 25.4	131 4.6	4.0	52 42.33
20	24 54.9	350 34.2	359 23.4	262 50.5	5.0	65 52.92
30	24 54.8	350 4.2	359 21.5	34 36.3	6.0	79 3.50
June 9	24 54.6	349 34.2	359 19.6	166 22.1	7.0	92 14.09
19	24 54.5	349 4.1	359 17.7	298 8.0	8.0	105 24.67
29	24 54.3	348 34.1	359 15.8	69 53.8	9.0	118 35.25
July 9	24 54.2	348 4.0	359 13.9	201 39.7	10.0	131 45.84
19	24 54.0	347 34.0	359 12.0	333 25.5	11	0 32.94
29	24 53.8	347 4.0	359 10.1	105 11.4	2	1 5.88
Aug. 8	24 53.6	346 33.9	359 8.2	236 57.2	3	1 38.82
18	24 53.4	346 3.9	359 6.3	8 43.1	4	2 11.76
28	24 53.2	345 33.8	359 4.4	140 28.9	5	2 44.70
Sept. 7	24 53.0	345 3.8	359 2.5	272 14.8	6	3 17.64
17	24 52.8	344 33.7	359 0.6	44 0.6	7	3 50.59
27	24 52.6	344 3.7	358 58.8	175 46.5	8	4 23.53
Oct. 7	24 52.3	343 33.6	358 56.9	307 32.3	9	4 56.47
17	24 52.1	343 3.6	358 55.1	79 18.2	10	5 29.41
27	24 51.9	342 33.5	358 53.2	211 4.0	11	6 2.35
Nov. 6	24 51.6	342 3.4	358 51.4	342 49.8	12	6 35.29
16	24 51.4	341 33.3	358 49.5	114 35.7	13	7 8.23
26	24 51.1	341 3.3	358 47.7	246 21.5	14	7 41.17
Dec. 6	24 50.9	340 33.2	358 45.8	18 7.4	15	8 14.11
16	24 50.6	340 3.1	358 44.0	149 53.2	16	8 47.05
26	24 50.3	339 33.0	358 42.2	281 39.1	17	9 19.99
36	24 50.0	339 2.9	358 40.3	53 24.9	18	9 52.93

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	° ' "	° ' "					d h m
Jan. 1	17 13 46.18	13 26.40	-21 48 47.2	47 52.9	+9.34332	-9.7809	+4.33	+4.89	0 22 30.2
2	17 19 7.92	18 47.93	22 2 59.7	2 8.5	9.35471	9.7632	4.29	4.96	1 22 31.6
3	17 24 37.70	24 17.59	22 16 34.7	15 46.7	9.36480	9.7418	4.25	5.01	2 22 33.1
4	17 30 14.80	29 54.67	22 29 27.2	28 42.7	9.37382	9.7166	4.21	5.05	3 22 34.8
5	17 35 58.61	35 38.53	22 41 32.9	40 52.2	9.38194	9.6874	4.17	5.09	4 22 36.6
6	17 41 48.58	41 28.61	22 52 48.0	52 11.2	9.38927	9.6536	4.13	5.12	5 22 38.5
7	17 47 44.20	47 24.41	23 3 9.0	2 36.2	9.39527	9.6146	4.10	5.14	6 22 40.4
8	17 53 45.02	53 25.48	23 12 32.7	12 3.9	9.40188	9.5692	4.06	5.16	7 22 42.5
9	17 59 50.64	59 31.40	23 20 56.3	20 31.5	9.40736	9.5162	4.03	5.18	8 22 44.7
10	18 6 0.69	5 41.80	23 28 17.3	27 56.4	9.41236	9.4533	3.99	5.19	9 22 46.9
11	18 12 14.83	11 56.34	23 34 33.4	34 16.3	9.41693	9.3767	3.96	5.21	10 22 49.2
12	18 18 32.77	18 14.72	23 39 42.4	39 29.1	9.42113	9.2807	3.93	5.22	11 22 51.6
13	18 24 54.23	24 36.66	23 43 42.4	43 32.8	9.42500	9.1532	3.90	5.23	12 22 54.0
14	18 31 18.96	31 1.91	23 46 31.6	46 25.6	9.42855	8.9665	3.87	5.24	13 22 56.4
15	18 37 46.73	37 30.23	23 48 8.4	48 5.8	9.43183	-8.6191	3.83	5.25	14 22 58.9
16	18 44 17.33	44 1.41	23 48 31.3	48 31.8	9.43486	+8.0060	3.80	5.26	15 23 1.5
17	18 50 50.55	50 35.24	23 47 38.9	47 42.3	9.43765	8.7983	3.77	5.27	16 23 4.2
18	18 57 26.21	57 11.54	23 45 29.9	45 36.0	9.44023	9.0662	3.74	5.27	17 23 6.8
19	19 4 4.13	3 50.13	23 42 3.1	42 11.7	9.44261	9.2327	3.71	5.28	18 23 9.5
20	19 10 44.15	10 30.84	23 37 17.4	37 28.2	9.44481	9.3542	3.67	5.29	19 23 12.2
21	19 17 26.12	17 13.52	23 31 11.7	31 24.4	9.44683	9.4502	3.64	5.29	20 23 15.0
22	19 24 9.90	23 58.03	23 23 45.1	23 59.4	9.44871	9.5295	3.61	5.30	21 23 17.8
23	19 30 55.36	30 44.24	23 14 56.6	15 12.2	9.45043	9.5974	3.57	5.30	22 23 20.6
24	19 37 42.37	37 32.02	23 4 45.3	5 1.9	9.45203	9.6566	3.54	5.30	23 23 23.4
25	19 44 30.81	44 21.24	22 53 10.4	53 27.7	9.45349	9.7090	3.50	5.31	24 23 26.3
26	19 51 20.57	51 11.79	22 40 11.2	40 28.8	9.45483	9.7563	3.47	5.31	25 23 29.2
27	19 58 11.54	58 3.57	22 25 47.1	26 4.6	9.45606	9.7992	3.43	5.31	26 23 32.1
28	20 5 3.62	4 56.47	22 9 57.4	10 14.5	9.45718	9.8385	3.39	5.32	27 23 35.0
29	20 11 56.72	11 50.40	21 52 41.4	52 57.8	9.45820	9.8748	3.35	5.32	28 23 38.0
30	20 18 50.75	18 45.27	21 33 58.5	34 13.9	9.45913	9.9085	3.31	5.32	29 23 41.0
31	20 25 45.63	25 41.00	21 13 48.3	14 2.3	9.45998	9.9399	3.28	5.33	30 23 43.9
Feb. 1	20 32 41.20	32 37.51	20 52 10.3	52 22.5	9.46075	9.9694	3.23	5.33	0 23 46.9
2	20 39 37.65	39 34.73	20 29 4.0	29 14.0	9.46145	9.9972	3.18	5.33	1 23 49.9
3	20 46 34.64	46 32.50	20 4 29.1	4 36.5	9.46207	0.0233	3.13	5.33	2 23 52.9
4	20 53 32.19	53 31.02	19 38 25.4	38 29.9	9.46262	0.0480	3.08	5.33	3 23 56.0
5	21 0 30.23	0 29.95	19 10 52.7	10 53.9	9.46310	0.0714	3.03	5.33	4 23 59.0
6	21 7 23.71	7 29.31	18 41 50.7	41 48.2	9.46352	0.0937	2.96	5.33	5 24 0.0
7	21 14 27.57	14 29.05	18 11 19.4	11 12.7	9.46387	0.1149	2.87	5.33	6 24 0.1
8	21 21 26.74	21 29.11	17 39 18.8	39 7.6	9.46418	0.1351	2.78	5.33	7 24 0.1
9	21 28 26.16	28 29.42	17 5 49.1	5 33.1	9.46438	0.1543	2.61	5.33	8 24 0.1
10	21 35 25.75	35 29.90	16 30 50.6	30 29.4	9.46452	0.1726	+2.34	5.33	9 24 0.1
11	21 42 25.43	42 30.47	15 54 23.8	53 57.0	9.46458	0.1901	-1.38	5.32	10 24 0.1
12	21 49 25.10	49 31.03	15 16 29.4	15 56.6	9.46452	0.2068	2.42	5.32	11 24 0.1
13	21 56 24.66	56 31.48	14 37 8.4	36 29.3	9.46433	0.2226	2.76	5.31	12 24 0.1
14	22 3 23.98	3 31.63	13 56 22.0	55 36.3	9.46400	0.2376	3.00	5.31	13 24 0.1
15	22 10 22.89	10 31.47	13 14 11.8	13 19.2	9.46348	0.2518	3.16	5.30	14 24 0.1
16	22 17 21.20	17 30.65	12 30 39.8	29 39.9	9.46275	0.2652	3.30	5.28	15 24 0.1
17	22 24 18.68	24 25.98	11 45 48.4	44 41.0	9.46176	0.2778	3.42	5.26	16 24 0.1
18	22 31 15.06	31 26.19	10 59 40.7	58 25.6	9.46045	0.2895	3.54	5.24	17 24 0.1
19	22 38 10.01	38 21.95	10 12 20.5	10 57.5	9.45875	0.3003	3.65	5.21	18 24 0.1
20	22 45 3.11	45 15.84	9 23 52.3	22 21.4	9.45656	0.3101	3.75	5.18	19 24 0.1
21	22 51 53.87	52 7.35	8 34 21.5	32 42.8	9.45379	0.3188	3.85	5.13	20 24 0.1
22	22 58 41.71	58 55.89	7 43 54.5	42 8.0	9.45034	0.3263	3.94	5.07	21 24 0.1
23	23 5 25.96	5 40.77	6 52 38.8	50 44.7	9.44607	0.3326	4.02	4.99	22 24 0.1
24	23 12 5.82	12 21.20	5 60 43.0	58 41.7	9.44084	0.3375	4.11	4.86	23 24 0.1
25	23 18 40.38	18 56.25	5 8 17.2	6 9.2	9.43445	0.3409	4.19	4.65	24 24 0.1
26	23 25 8.58	25 24.85	4 15 32.9	13 18.8	9.42669	0.3426	4.26	+4.15	25 24 0.1
27	23 31 29.24	31 45.79	3 22 42.9	20 23.6	9.41736	0.3424	4.33	-4.31	26 24 0.1
28	23 37 41.04	37 57.74	2 30 1.5	27 38.0	9.40618	0.3402	4.40	4.77	27 24 0.1
29	23 43 42.52	43 59.23	1 37 44.3	35 17.8	9.39285	0.3357	4.46	5.00	28 24 0.1
30	23 49 32.10	49 48.66	-0 46 8.2	43 40.1	9.37705	0.3287	4.52	5.15	29 24 0.1
31	23 55 8.11	55 24.35	+0 4 28.9	6 57.1	+9.35837	+0.3190	-4.57	-5.27	30 24 0.1

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Polar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. 1	23 43 42.52	43 59 23	- 1 37 44.3	35 17.8	+9.30285	+0.3357	-4.46	-5.09	1 1 7.7
2	23 49 32.10	49 48.66	- 0 46 8.2	43 40.1	9.37705	0.3257	4.52	5.15	2 1 9.6
3	23 55 8.11	55 24.35	+ 0 4 28.9	6 57.1	9.35837	0.3190	4.57	5.27	3 1 11.2
4	0 0 23.80	0 44.54	0 53 48.4	56 15.1	9.33639	0.3062	4.62	5.37	4 1 12.6
5	0 5 32.37	5 47.42	1 41 31.2	43 54.7	9.31058	0.2900	4.66	5.45	5 1 13.7
6	0 10 17.01	10 31.19	2 27 17.8	29 36.3	9.28731	0.2701	4.70	5.51	6 1 14.5
7	0 14 40.94	14 54.07	3 10 43.7	13 0.5	9.24473	0.2459	4.73	5.57	7 1 14.9
8	0 18 42.42	18 54.35	3 51 45.0	53 48.4	9.20232	0.2169	4.76	5.62	8 1 14.9
9	0 22 19.84	22 30.43	4 29 48.5	31 41.8	9.15318	0.1823	4.79	5.66	9 1 14.6
10	0 25 31.75	25 40.88	5 4 41.7	6 23.6	9.09376	0.1411	4.81	5.70	10 1 13.9
11	0 28 16.84	28 24.44	5 36 8.5	37 37.9	9.02145	0.0917	4.83	5.73	11 1 12.7
12	0 30 34.02	30 40.05	6 3 54.0	5 10.1	8.93133	0.0320	4.84	5.75	12 1 11.0
13	0 32 22.49	32 26.95	6 27 44.7	28 47.0	8.81435	0.0586	4.85	5.77	13 1 8.8
14	0 33 41.73	33 44.67	6 47 28.9	48 17.2	8.65140	0.0660	4.86	5.79	14 1 6.2
15	0 34 31.55	34 33.06	7 2 56.9	3 31.5	8.38732	0.0432	4.85	5.80	15 1 3.1
16	0 34 52.11	34 52.34	7 14 1.0	14 22.7	+7.62626	0.0662	4.84	5.81	16 0 59.4
17	0 34 43.99	34 43.12	7 20 36.3	20 46.1	-8.18721	+0.2164	4.82	5.82	17 0 55.3
18	0 34 8.19	34 6.44	7 22 40.6	22 40.0	8.53361	-7.8070	4.80	5.81	18 0 50.8
19	0 33 6.16	33 3.77	7 20 15.1	20 6.0	8.71415	9.2874	4.77	5.81	19 0 45.8
20	0 31 39.80	31 37.04	7 13 24.8	13 9.5	8.83189	9.5740	4.72	5.79	20 0 40.4
21	0 29 51.47	29 48.69	7 2 19.0	1 50.8	8.91507	9.7300	4.67	5.77	21 0 24.7
22	0 27 43.93	27 41.21	6 47 10.9	46 50.4	8.97563	9.8517	4.59	5.73	22 0 22.7
23	0 25 30.30	25 17.96	6 28 18.4	27 59.2	9.01929	9.9349	4.48	5.69	23 0 22.4
24	0 22 44.02	22 42.24	6 6 3.9	5 48.2	9.04957	9.9861	4.34	5.63	24 0 15.8
25	0 19 58.71	19 57.64	5 40 53.5	40 43.4	9.06842	0.0427	4.11	5.56	25 0 9.1
26	0 17 8.12	17 7.84	5 13 16.7	13 13.8	9.07767	0.0770	-3.57	5.44	26 0 2.4
27	0 14 15.99	14 16.51	4 43 45.4	43 50.9	9.07636	0.1011	+3.70	5.29	26 23 55.6
28	0 11 25.92	11 27.21	4 12 52.9	13 7.4	9.06651	0.1162	4.12	5.16	27 23 48.9
29	0 8 41.34	8 43.31	3 41 12.8	41 36.4	9.04784	0.1233	4.32	-4.54	28 23 42.2
30	0 6 5.35	6 7.88	3 9 18.2	9 50.4	9.01900	0.1230	4.44	+4.61	29 23 35.7
31	0 3 40.69	3 43.62	2 37 40.2	38 20.1	8.96209	0.1159	4.52	5.04	30 23 29.4
Apr. 1	0 1 20.70	1 32.85	2 6 47.5	7 33.9	8.93327	0.1020	4.58	5.23	0 23 23.3
2	23 59 34.30	59 37.47	1 37 5.7	37 57.1	8.87136	0.0819	4.62	5.35	1 23 17.4
3	23 57 56.00	57 58.99	1 8 56.7	9 51.5	8.79273	0.0554	4.64	5.43	2 23 11.9
4	23 56 35.90	56 38.53	0 49 39.1	43 35.4	8.69118	0.0225	4.66	5.49	3 23 6.6
5	23 53 34.73	55 36.84	+ 0 18 27.9	19 24.0	8.55378	9.9827	4.67	5.52	4 23 1.7
6	23 54 52.90	54 54.33	- 0 3 25.5	2 31.1	8.34814	9.9356	4.67	5.55	5 22 57.0
7	23 54 30.53	54 31.14	0 22 52.8	22 1.5	-7.94442	9.8900	4.67	5.56	6 22 52.7
8	23 54 27.51	54 27.20	0 39 48.4	39 1.7	+7.63921	9.8141	4.66	5.57	7 22 48.7
9	23 54 43.55	54 42.25	0 54 8.9	53 28.0	8.24699	9.7351	4.65	5.58	8 22 45.0
10	23 55 18.20	55 15.85	1 5 52.9	5 18.7	8.48222	9.6381	4.64	5.58	9 22 41.7
11	23 56 10.89	56 7.44	1 15 0.8	14 34.0	8.63044	9.5138	4.62	5.57	10 22 38.6
12	23 57 20.96	57 16.39	1 21 34.2	21 15.4	8.73673	9.3424	4.61	5.56	11 22 35.8
13	23 58 47.74	58 42.05	1 23 35.5	25 25.2	8.81891	9.0625	4.58	5.55	12 22 33.3
14	0 0 30.51	0 23.71	1 27 8.1	27 6.6	8.88508	-8.1294	4.56	5.54	13 22 31.0
15	0 2 28.53	2 20.64	1 26 15.8	26 23.3	8.93997	+8.9333	4.54	5.53	14 22 29.0
16	0 4 41.06	4 32.13	1 23 2.8	23 19.4	8.98643	9.2598	4.52	5.52	15 22 27.3
17	0 7 7.45	6 57.47	1 17 33.6	17 59.2	9.02650	9.4301	4.50	5.50	16 22 25.8
18	0 9 46.97	9 36.00	1 9 52.8	10 27.3	9.06146	9.5619	4.48	5.49	17 22 24.5
19	0 12 39.00	12 27.09	1 0 5.1	0 48.3	9.09226	9.6543	4.46	5.47	18 22 23.4
20	0 15 42.92	15 33.11	0 48 15.0	49 6.8	0.11964	9.7280	4.44	5.45	19 22 22.5
21	0 18 58.16	18 44.50	0 34 27.1	35 27.2	9.14423	9.7887	4.42	5.44	20 22 21.8
22	0 22 24.19	22 9.73	0 18 45.9	19 53.9	9.16648	9.8401	4.40	5.42	21 22 21.3
23	0 26 0.53	26 45.33	- 0 1 15.7	2 31.3	9.18672	9.8843	4.38	5.40	22 22 21.0
24	0 29 46.74	29 30.84	+ 0 17 50.2	16 36.3	9.20527	9.9229	4.36	5.39	23 22 20.8
25	0 33 42.43	33 25.89	0 38 54.6	37 24.9	9.22241	9.9670	4.34	5.37	24 22 20.8
26	0 37 47.24	37 30.09	0 61 26.6	59 50.6	9.23220	9.9875	4.33	5.35	25 22 20.9
27	0 42 0.85	41 43.16	1 25 31.5	25 49.5	9.23312	0.0149	4.31	5.33	26 22 21.1
28	0 46 23.00	46 4.81	1 51 5.6	49 17.9	9.26708	0.0896	4.30	5.31	27 22 21.5
29	0 50 53.47	50 34.82	2 18 5.1	16 12.3	9.29089	0.0690	4.29	5.30	28 22 22.1
30	0 55 32.08	55 13.02	2 46 26.6	44 29.2	9.29994	0.0625	4.29	5.29	29 22 22.8
31	0 60 18.67	59 59.25	+ 3 16 6.7	14 5.2	+9.30485	+0.1013	+4.23	+5.26	30 22 23.6

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
	h m s	m s	h m s	m s					
May 1	0 60 18.67	59 59.25	+ 3 16 6.7	14 5.2	+9.30485	+0.1013	+4.28	+5.26	0 22 23.6
2	1 5 13.13	4 53.38	3 47 2.1	44 56.9	9.31640	0.1186	4.27	5.24	1 22 24.6
3	1 10 15.39	9 55.35	4 19 9.5	17 1.1	9.32757	0.1345	4.27	5.22	2 22 25.7
4	1 15 25.43	15 5.14	4 52 25.8	50 14.7	9.33846	0.1491	4.27	5.20	3 22 26.9
5	1 20 43.23	20 22.75	5 26 47.7	24 34.4	9.34908	0.1625	4.27	5.18	4 22 28.2
6	1 26 8.83	25 48.19	5 52 11.8	59 56.9	9.35952	0.1749	4.28	5.15	5 22 29.7
7	1 31 42.30	31 21.54	6 38 35.0	36 19.0	9.36984	0.1864	4.28	5.13	6 22 31.3
8	1 37 23.75	37 2.91	7 15 54.2	13 37.5	9.38006	0.1969	4.29	5.10	7 22 33.1
9	1 43 13.30	42 52.42	7 54 5.8	51 49.0	9.39020	0.2065	4.30	5.07	8 22 35.0
10	1 49 11.09	48 50.23	8 33 6.2	30 50.0	9.40032	0.2152	4.31	5.04	9 22 37.0
11	1 55 17.33	54 56.53	9 12 51.8	10 36.7	9.41046	0.2231	4.32	5.00	10 22 39.1
12	2 1 32.23	1 11.54	9 53 18.6	51 5.2	9.42062	0.2301	4.33	4.95	11 22 41.4
13	2 7 56.01	7 35.49	10 34 22.5	32 11.4	9.43080	0.2363	4.34	4.90	12 22 43.9
14	2 14 28.90	14 8.69	11 15 59.1	13 50.9	9.44102	0.2415	4.36	4.82	13 22 46.5
15	2 21 11.17	20 51.18	11 58 3.3	55 58.7	9.45130	0.2458	4.37	4.73	14 22 49.2
16	2 28 3.09	27 43.46	12 40 29.9	38 20.5	9.46160	0.2492	4.38	4.61	15 22 52.1
17	2 35 4.91	34 45.72	13 23 13.3	21 17.7	9.47192	0.2515	4.39	4.40	16 22 55.2
18	2 42 16.83	41 58.22	14 6 7.2	4 17.1	9.48224	0.2527	4.40	+3.93	17 22 58.5
19	2 49 39.24	49 21.20	14 49 4.6	47 20.6	9.49255	0.2527	4.41	-4.00	18 23 1.9
20	2 57 12.17	56 54.85	15 31 57.9	30 20.7	9.50277	0.2513	4.41	4.48	19 23 5.5
21	3 4 55.82	4 39.33	16 14 38.8	13 9.0	9.51286	0.2485	4.42	4.71	20 23 9.3
22	3 12 50.27	12 34.72	16 56 58.2	55 36.3	9.52275	0.2440	4.42	4.88	21 23 13.3
23	3 20 55.51	20 41.02	17 38 46.3	37 32.8	9.53239	0.2377	4.41	5.00	22 23 17.4
24	3 29 11.47	28 58.16	18 19 52.7	18 48.0	9.54169	0.2294	4.40	5.11	23 23 21.8
25	3 37 37.91	37 25.92	18 60 6.3	59 10.5	9.55055	0.2188	4.39	5.19	24 23 26.3
26	3 46 14.48	46 3.95	19 30 15.2	38 28.5	9.55888	0.2057	4.37	5.27	25 23 30.9
27	3 55 0.67	54 51.74	20 17 7.1	16 29.6	9.56656	0.1898	4.34	5.33	26 23 35.8
28	4 3 55.82	3 48.62	20 53 22.7	53 1.2	9.57352	0.1708	4.29	5.39	27 23 40.8
29	4 12 50.10	12 53.74	21 29 10.6	27 50.8	9.57965	0.1483	4.24	5.44	28 23 45.9
30	4 22 9.52	22 6.11	22 0 57.7	0 46.0	9.58485	0.1218	4.16	5.48	29 23 51.2
31	4 31 25.95	31 24.61	22 31 39.6	31 35.3	9.58906	0.0910	4.06	5.52	30 23 56.5
June 1	4 40 47.11	40 47.89	23 0 5.7	0 8.0	9.59219	0.0552	3.91	5.55	1 0 1.9
2	4 50 11.62	50 14.56	23 26 6.6	26 14.3	9.59423	0.0135	3.66	5.57	2 0 7.4
3	4 59 38.04	59 43.15	23 49 34.2	49 46.2	9.59513	0.0651	+3.01	5.58	3 0 13.0
4	5 9 4.83	9 12.15	24 10 22.5	10 37.5	9.59438	9.9087	-3.42	5.60	4 0 18.5
5	5 18 30.64	18 40.05	24 28 26.9	28 43.6	9.59348	9.8422	3.79	5.60	5 0 24.0
6	5 27 53.86	27 5.35	24 43 44.8	44 1.9	9.59097	9.7629	3.98	5.61	6 0 29.4
7	5 37 13.15	37 26.63	24 56 15.1	56 31.3	9.58740	9.6656	4.10	5.60	7 0 34.8
8	5 46 27.21	46 42.57	25 5 58.6	6 12.5	9.58231	9.5411	4.19	5.60	8 0 40.2
9	5 55 34.83	55 51.96	25 12 57.4	13 7.9	9.57726	9.3619	4.26	5.59	9 0 45.4
10	6 4 34.93	4 53.69	25 17 15.0	17 21.1	9.57081	9.0030	4.31	5.58	10 0 50.4
11	6 13 26.55	13 46.80	25 18 56.1	18 56.9	9.56353	+8.2326	4.35	5.56	11 0 55.3
12	6 22 8.87	22 30.46	25 18 6.2	18 0.9	9.55543	-8.9330	4.38	5.54	12 1 0.1
13	6 30 41.17	31 3.95	25 14 51.5	14 39.4	9.54672	9.2647	4.41	5.52	13 1 4.7
14	6 39 2.85	39 26.67	25 9 18.8	9 59.4	9.53729	9.4429	4.43	5.50	14 1 9.2
15	6 47 13.42	47 38.12	25 1 35.3	1 8.3	9.52726	9.5630	4.44	5.47	15 1 13.4
16	6 55 12.47	55 37.89	24 51 48.4	51 13.5	9.51665	9.6519	4.46	5.45	16 1 17.4
17	7 2 59.66	3 25.67	24 40 5.5	39 22.5	9.50550	9.7215	4.47	5.42	17 1 21.3
18	7 10 34.74	11 1.20	24 26 34.2	26 43.1	9.49385	9.7776	4.47	5.39	18 1 24.9
19	7 17 57.52	18 24.29	24 11 22.1	10 23.0	9.48170	9.8239	4.48	5.35	19 1 28.3
20	7 25 7.85	25 34.80	23 54 36.6	53 20.6	9.46907	9.8623	4.48	5.32	20 1 31.6
21	7 32 5.62	32 32.62	23 36 24.8	35 10.2	9.45606	9.8957	4.48	5.28	21 1 34.6
22	7 38 50.74	38 17.63	23 16 53.9	15 32.0	9.44226	9.9227	4.49	5.24	22 1 37.4
23	7 45 23.14	45 49.92	22 56 11.0	54 42.2	9.42826	9.9477	4.49	5.20	23 1 40.0
24	7 51 42.78	52 9.20	22 34 23.0	32 47.7	9.41363	9.9682	4.49	5.15	24 1 42.4
25	7 57 40.61	58 15.74	22 11 36.5	9 55.2	9.39844	9.9857	4.49	5.10	25 1 44.5
26	8 3 43.58	4 9.23	21 47 58.0	46 11.2	9.38263	0.0007	4.49	5.04	26 1 46.5
27	8 9 24.64	9 49.73	21 23 34.0	21 42.2	9.36615	0.0133	4.49	4.98	27 1 48.2
28	8 14 52.74	15 17.19	20 58 30.6	56 34.5	9.34894	0.0228	4.50	4.91	28 1 49.7
29	8 20 7.80	20 31.54	20 32 53.9	30 54.2	9.33092	0.0323	4.50	4.82	29 1 51.0
30	8 25 9.74	25 32.60	20 6 50.0	4 47.4	9.31199	0.0390	4.50	4.71	30 1 52.0
31	8 29 58.47	30 20.55	+19 40 25.0	38 20.1	+9.29200	-0.0440	-4.51	-4.56	31 1 52.9

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July	h m s	m s	° ' "	° ' "					d h m
1	8 29 58.47	30 20.55	+19 40 25.0	38 20.1	+9.29200	-0.0440	-4.51	-4.56	1 1 52.9
2	8 34 33.85	34 54.99	19 13 44.8	11 38.3	9.27083	0.0473	4.51	4.35	2 1 53.6
3	8 38 55.72	39 15.86	18 46 55.4	44 47.9	9.24827	0.0490	4.52	-3.90	3 1 53.9
4	8 43 3.90	43 22.98	18 20 2.7	17 54.9	9.22414	0.0491	4.53	+3.80	4 1 54.1
5	8 46 58.19	47 16.15	17 53 12.6	51 5.3	9.19817	0.0476	4.53	4.32	5 1 54.1
6	8 50 38.35	50 55.13	17 26 31.1	24 25.1	9.17003	0.0444	4.54	4.55	6 1 53.8
7	8 54 4.11	54 19.67	16 6 4.4	58 0.5	9.13933	0.0395	4.55	4.70	7 1 53.3
8	8 57 15.19	57 29.48	16 33 58.7	31 57.5	9.10558	0.0328	4.56	4.82	8 1 52.5
9	9 0 11.27	0 24.25	16 8 20.2	6 22.4	9.06814	0.0243	4.57	4.91	9 1 51.4
10	9 2 52.00	3 3.64	15 43 15.3	41 21.7	9.02613	0.0136	4.58	4.99	10 1 50.1
11	9 5 17.01	5 27.29	15 18 50.7	17 2.0	8.97942	0.0007	4.59	5.05	11 1 48.6
12	9 7 25.92	7 34.82	14 55 13.1	53 30.0	8.92346	9.9852	4.60	5.11	12 1 46.8
13	9 9 18.33	9 25.84	14 32 29.3	30 52.4	8.85876	9.9670	4.61	5.17	13 1 44.7
14	9 10 53.82	10 59.95	14 10 46.3	9 16.2	8.78666	9.9455	4.62	5.22	14 1 42.4
15	9 12 11.99	12 16.75	13 50 11.5	48 48.7	8.68287	9.9232	4.63	5.26	15 1 39.7
16	9 13 12.45	13 15.87	13 30 52.3	29 37.3	8.55336	9.8905	4.64	5.30	16 1 36.7
17	9 13 54.86	13 56.98	13 12 56.0	11 49.2	8.36395	9.8555	4.65	5.34	17 1 33.5
18	9 14 18.92	14 19.80	12 56 29.9	55 31.6	+8.01161	9.8141	4.65	5.37	18 1 29.9
19	9 14 24.37	14 24.10	12 41 41.3	40 51.6	-7.43382	9.7646	4.66	5.40	19 1 26.1
20	9 14 11.05	14 9.73	12 28 37.5	27 56.3	8.19805	9.7044	4.66	5.43	20 1 21.9
21	9 13 38.94	13 36.68	12 17 25.4	16 52.6	8.45948	9.6208	4.65	5.45	21 1 17.4
22	9 12 48.16	12 45.10	12 8 12.5	7 46.8	8.62001	9.5343	4.65	5.48	22 1 12.6
23	9 11 39.00	11 35.30	12 1 1.5	0 44.4	8.73485	9.4055	4.64	5.49	23 1 7.5
24	9 10 11.95	10 7.80	11 56 0.3	55 50.2	8.82282	9.2134	4.62	5.51	24 1 2.2
25	9 8 27.75	8 23.33	11 53 11.9	53 8.0	8.89264	-8.8460	4.59	5.51	25 0 56.5
26	9 6 27.41	6 22.91	11 52 30.0	52 40.3	8.94885	+8.3906	4.55	5.52	26 0 50.6
27	9 4 12.84	4 7.86	11 54 22.7	54 28.1	8.99414	9.0772	4.50	5.52	27 0 44.4
28	9 1 43.87	1 39.80	11 58 22.5	58 30.7	9.03015	9.3291	4.43	5.51	28 0 38.0
29	8 59 4.23	59 0.65	12 4 35.9	4 45.5	9.05791	9.4840	4.34	5.49	29 0 31.4
30	8 56 15.59	56 12.64	12 12 58.5	13 8.2	9.07736	9.5938	4.19	5.47	30 0 24.7
31	8 53 20.50	53 18.30	12 23 23.6	23 32.1	9.09057	9.6764	3.94	5.44	31 0 17.9
Aug	8 50 21.80	50 20.43	12 35 42.6	35 48.6	9.09570	9.7466	-3.13	5.40	1 0 11.0
2	8 47 22.54	47 22.03	12 49 44.9	49 47.3	9.09323	9.7910	+3.81	5.34	2 0 4.1
3	8 44 25.92	44 26.25	13 5 18.1	5 16.2	9.08269	9.8302	4.16	5.27	2 23 57.2
4	8 41 35.23	41 36.33	13 22 8.4	22 1.5	9.06337	9.8603	4.35	5.17	3 23 50.5
5	8 38 53.76	38 55.51	13 40 0.7	39 48.4	9.03412	9.8823	4.48	5.05	4 23 43.9
6	8 36 24.75	36 26.98	13 58 39.2	58 21.4	8.99310	9.8971	4.58	4.86	5 23 37.4
7	8 34 11.31	34 13.80	14 17 47.5	17 24.4	8.93740	9.9052	4.65	+4.51	6 23 31.3
8	8 32 16.33	32 18.85	14 37 9.1	36 41.2	8.86217	9.9071	4.71	-3.89	7 23 25.5
9	8 30 42.44	30 44.74	14 56 27.6	55 55.6	8.75836	9.9029	4.75	4.67	8 23 20.0
10	8 29 31.96	29 33.79	15 15 26.9	14 51.7	8.60574	9.8926	4.79	4.92	9 23 14.9
11	8 28 46.89	28 48.01	15 33 51.4	33 14.0	8.34379	9.8759	4.82	5.08	10 23 10.2
12	8 28 28.90	28 29.07	15 51 26.1	50 47.6	-7.44261	9.8523	4.84	5.19	11 23 5.9
13	8 28 39.39	28 38.32	16 7 56.5	7 18.1	+8.23871	9.8210	4.85	5.27	12 23 2.1
14	8 29 19.06	29 16.76	16 23 8.9	22 31.9	8.57947	9.7807	4.86	5.34	13 22 58.8
15	8 30 28.81	30 25.07	16 36 50.3	36 15.9	8.77045	9.7291	4.86	5.40	14 22 56.0
16	8 32 8.83	32 3.61	16 48 48.2	48 17.3	8.90332	9.6626	4.86	5.44	15 22 53.8
17	8 34 19.20	34 12.45	16 58 50.7	58 25.0	9.00456	9.5749	4.86	5.48	16 22 52.0
18	8 36 59.77	36 51.36	17 6 46.6	6 26.7	9.08557	9.4535	4.85	5.52	17 22 50.7
19	8 40 9.78	39 59.85	17 12 25.4	12 12.2	9.15242	9.2681	4.84	5.55	18 22 49.9
20	8 43 48.54	43 37.18	17 15 37.4	15 31.5	9.20862	+8.9046	4.83	5.58	19 22 49.6
21	8 47 55.01	47 42.35	17 16 13.7	16 15.6	9.25648	-8.4880	4.80	5.60	20 22 49.7
22	8 52 27.92	52 14.12	17 14 6.4	14 16.4	9.27747	9.1667	4.78	5.61	21 22 50.3
23	8 57 25.78	57 11.02	17 9 8.9	9 27.0	9.33271	9.4264	4.75	5.63	22 22 51.3
24	9 2 46.89	2 31.38	17 1 16.2	1 42.3	9.36293	9.5911	4.71	5.63	23 22 52.7
25	9 8 20.37	8 13.34	16 50 24.9	50 58.5	9.38881	9.7117	4.67	5.64	24 22 54.4
26	9 14 31.21	14 14.88	16 36 33.2	37 13.6	9.41079	9.8063	4.62	5.64	25 22 56.5
27	9 20 50.27	20 33.86	16 19 41.4	2 27.9	9.42929	9.8835	4.56	5.63	26 22 58.9
28	9 27 24.36	27 8.08	15 59 51.9	63 43.7	9.44463	9.9478	4.49	5.62	27 23 1.5
29	9 34 11.24	33 55.30	15 37 8.9	38 4.8	9.45710	0.0023	4.41	5.61	28 23 4.3
30	9 41 8.70	40 53.28	15 11 38.4	12 37.2	9.46698	0.0489	4.31	5.59	29 23 7.3
31	9 48 14.60	47 59.85	+14 43 28.1	44 28.7	+9.47453	-0.0889	+4.19	-5.56	30 23 10.5

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
Sept. 1	9 55 26.90	55 12.95	+14 12 47.2	13 48.5	+9.47999	-0.1233	+4.04	-5.53	0 23 13.8
2	10 2 43.72	2 30.67	13 39 46.1	40 47.0	9.48360	0.1529	3.83	5.49	1 23 17.1
3	10 10 3.34	9 51.26	13 4 35.8	5 35.3	9.48557	0.1783	+3.48	5.45	2 23 20.5
4	10 17 24.21	17 13.16	12 27 27.8	28 25.0	9.48611	0.2001	-2.39	5.41	3 23 23.9
5	10 24 45.00	24 35.02	11 48 33.9	49 27.9	9.48545	0.2187	3.47	5.36	4 23 27.3
6	10 32 4.58	31 55.63	11 8 5.8	8 56.0	9.48376	0.2346	3.72	5.30	5 23 30.7
7	10 39 22.01	39 14.17	10 26 14.8	27 0.7	9.48121	0.2480	3.85	5.24	6 23 34.1
8	10 46 36.50	46 29.70	9 43 11.8	43 52.9	9.47793	0.2592	3.93	5.17	7 23 37.4
9	10 53 47.44	53 41.67	8 59 7.1	59 43.0	9.47411	0.2685	3.99	5.10	8 23 40.6
10	11 0 54.38	0 49.61	8 14 10.2	14 40.7	9.46984	0.2762	4.02	5.02	9 23 43.8
11	11 7 56.98	7 53.17	7 28 30.2	28 55.2	9.46524	0.2823	4.04	4.92	10 23 46.9
12	11 14 55.01	14 52.12	6 42 15.4	42 34.8	9.46042	0.2872	4.05	4.82	11 23 50.0
13	11 21 48.34	21 46.32	5 55 33.3	55 47.1	9.45543	0.2909	4.06	4.69	12 23 52.9
14	11 28 36.91	28 35.72	5 8 30.7	8 39.0	9.45037	0.2935	4.06	4.54	13 23 55.8
15	11 35 20.73	35 20.33	4 21 13.6	21 16.4	9.44529	0.2953	4.05	4.33	14 23 58.6
16	11 41 59.86	42 0.21	3 33 47.7	33 45.1	9.44023	0.2963	4.04	-3.95	16 0 1.3
17	11 48 34.40	48 35.46	2 46 18.1	46 10.3	9.43524	0.2965	4.03	+3.29	17 0 3.9
18	11 55 4.43	55 6.92	1 58 49.3	58 36.5	9.43035	0.2963	4.02	4.06	18 0 6.5
19	12 1 30.25	1 32.64	1 11 25.3	11 7.6	9.42560	0.2950	4.00	4.31	19 0 9.0
20	12 7 51.88	7 54.89	+ 0 24 9.8	23 47.4	9.42100	0.2934	3.98	4.45	20 0 11.4
21	12 14 9.56	14 13.16	- 0 22 53.9	23 20.8	9.41656	0.2914	3.96	4.55	21 0 13.8
22	12 20 23.49	20 27.64	1 9 42.8	10 14.0	9.41232	0.2889	3.93	4.62	22 0 16.1
23	12 26 33.86	26 38.54	1 56 14.3	56 49.6	9.40827	0.2860	3.91	4.68	23 0 18.3
24	12 32 40.87	32 46.06	2 42 25.8	43 5.0	9.40440	0.2827	3.88	4.73	24 0 20.5
25	12 38 44.71	38 50.40	3 28 15.0	28 58.0	9.40073	0.2790	3.86	4.77	25 0 22.6
26	12 44 45.58	44 51.74	4 13 39.9	14 26.4	9.39727	0.2750	3.83	4.80	26 0 24.7
27	12 50 43.66	50 50.27	4 58 38.6	59 28.4	9.39390	0.2706	3.80	4.83	27 0 26.7
28	12 56 39.12	56 46.17	5 43 9.3	44 2.2	9.39090	0.2659	3.77	4.85	28 0 28.7
29	13 2 32.14	2 39.62	6 27 10.4	28 6.2	9.38800	0.2609	3.74	4.88	29 0 30.6
30	13 8 22.89	8 30.79	7 10 40.3	11 38.8	9.38529	0.2556	3.71	4.90	30 0 32.5
Oct. 1	13 14 11.53	14 19.84	7 53 37.5	54 38.6	9.38276	0.2500	3.67	4.92	1 0 34.4
2	13 19 58.21	20 6.91	8 36 0.6	37 4.1	9.38039	0.2440	3.64	4.93	2 0 36.2
3	13 25 43.06	25 52.15	9 17 48.3	18 54.0	9.37817	0.2377	3.61	4.95	3 0 38.0
4	13 31 26.21	31 35.63	9 58 59.2	60 7.0	9.37608	0.2312	3.58	4.96	4 0 39.8
5	13 37 7.77	37 17.61	10 39 32.0	40 41.7	9.37413	0.2243	3.56	4.98	5 0 41.6
6	13 42 47.34	42 58.04	11 19 25.5	20 36.9	9.37230	0.2170	3.53	4.99	6 0 43.3
7	13 48 26.51	48 37.07	11 58 38.4	59 51.3	9.37056	0.2094	3.50	5.00	7 0 45.0
8	13 54 3.86	54 14.77	12 37 0.5	38 23.7	9.36890	0.2014	3.48	5.02	8 0 46.7
9	13 59 39.15	59 51.21	13 14 57.4	16 12.8	9.36730	0.1930	3.47	5.03	9 0 48.3
10	14 5 14.82	5 26.42	13 52 0.8	53 17.2	9.36575	0.1842	3.46	5.04	10 0 50.0
11	14 10 48.50	11 0.43	14 28 18.4	29 35.6	9.36419	0.1749	3.46	5.06	11 0 51.6
12	14 16 20.99	16 33.24	15 3 48.8	5 6.6	9.36263	0.1652	3.46	5.07	12 0 53.2
13	14 21 52.23	22 4.85	15 38 30.7	39 48.9	9.36105	0.1549	3.48	5.08	13 0 54.8
14	14 27 22.33	27 35.22	16 12 22.8	13 41.2	9.35938	0.1441	3.50	5.09	14 0 56.3
15	14 32 51.08	33 4.27	16 45 23.5	46 42.0	9.35761	0.1327	3.53	5.11	15 0 57.9
16	14 38 18.43	38 31.90	17 17 31.2	18 49.6	9.35568	0.1206	3.56	5.12	16 0 59.4
17	14 43 44.27	43 58.00	17 48 44.3	50 2.3	9.35356	0.1077	3.60	5.13	17 0 0.9
18	14 49 8.43	49 22.42	18 19 1.2	20 18.5	9.35119	0.0940	3.65	5.15	18 0 2.3
19	14 54 30.72	54 44.95	18 48 20.1	49 36.5	9.34851	0.0795	3.71	5.16	19 0 3.8
20	14 59 50.90	60 5.34	19 16 39.1	17 54.4	9.34547	0.0639	3.76	5.17	20 0 5.2
21	15 5 8.63	5 23.30	19 43 56.2	45 10.2	9.34197	0.0472	3.82	5.19	21 0 6.5
22	15 10 23.72	10 39.49	20 10 9.4	11 21.8	9.33792	0.0293	3.88	5.20	22 0 7.8
23	15 15 35.61	15 50.50	20 35 16.5	36 27.1	9.33323	0.0099	3.94	5.22	23 0 9.1
24	15 20 43.88	20 58.83	20 59 15.2	60 23.6	9.32777	9.9889	4.00	5.23	24 0 10.3
25	15 25 47.98	26 2.93	21 22 2.9	23 8.8	9.32137	9.9659	4.06	5.25	25 0 11.4
26	15 30 47.28	31 2.18	21 43 37.0	44 40.1	9.31391	9.9408	4.13	5.26	26 0 12.4
27	15 35 41.06	35 55.85	22 3 54.8	4 54.8	9.30514	9.9130	4.19	5.28	27 0 13.4
28	15 40 28.45	40 43.08	22 22 53.2	23 49.7	9.29482	9.8821	4.25	5.30	28 0 14.3
29	15 45 8.53	45 22.89	22 40 28.9	41 21.5	9.28264	9.8473	4.31	5.32	29 0 15.0
30	15 49 40.19	49 54.18	22 56 38.3	57 26.7	9.26823	9.8078	4.37	5.34	30 0 15.5
31	15 54 2.19	54 15.71	23 11 17.7	12 1.5	9.25112	9.7623	4.42	5.36	31 0 15.9
32	15 58 13.15	58 26.08	-23 24 23.0	25 1.8	+9.23068	-9.7090	-4.48	+5.38	32 0 16.2

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.		
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
Nov.	h m s	m s	° ' "	° ' "					d h m		
	15 58 13.15	58 26.08	-23 24 23.0	25 1.8	+9.23068	-9.7090	-4.48	+5.38	1 1 16.2		
	2 16 2 11.49	2 23.71	23 35 49.8	36 23.2	9.2610	9.6450	4.54	5.40	2 1 16.2		
	3 16 5 55.43	6 6.81	23 45 32.9	46 0.6	9.17629	9.5655	4.60	5.42	3 1 15.9		
	4 16 9 23.00	9 33.39	23 53 26.8	53 48.5	9.13977	9.4622	4.65	5.44	4 1 15.4		
	5 16 12 32.01	12 41.26	23 59 25.4	59 40.7	9.09437	9.3170	4.70	5.47	5 1 14.6		
	6 16 15 20.05	15 28.92	24 3 22.0	3 30.6	9.03668	9.0802	4.76	5.49	6 1 13.5		
	7 16 17 44.49	17 51.05	24 5 9.1	5 10.8	8.96132	-8.4393	4.80	5.52	7 1 12.0		
	8 16 19 42.54	19 47.56	24 4 38.3	4 33.1	8.85321	+8.8532	4.85	5.55	8 1 10.0		
	9 16 21 11.26	21 14.04	24 1 40.5	1 28.4	8.70532	9.2475	4.89	5.59	9 1 7.5		
	10 16 22 7.64	22 9.35	23 56 5.8	55 47.0	8.43504	9.4613	4.93	5.61	10 1 4.4		
	11 16 22 28.71	22 28.78	23 47 43.6	47 18.5	+7.23434	9.6123	4.96	5.63	11 1 0.8		
	12 16 22 11.70	22 10.22	23 36 22.9	35 52.4	-8.40843	9.7302	4.99	5.66	12 0 56.6		
	13 16 21 14.26	21 11.42	23 21 53.3	21 18.5	8.73529	9.8272	5.01	5.68	13 0 51.7		
	14 16 19 34.74	19 30.85	23 4 5.7	3 28.2	8.52316	9.9095	5.01	5.69	14 0 46.1		
	15 16 17 12.50	17 7.97	22 42 53.6	42 15.5	9.05516	9.9801	5.01	5.70	15 0 39.8		
	16 16 14 8.25	14 3.58	22 18 15.2	17 39.1	9.15259	0.0405	4.98	5.69	16 0 32.8		
	17 16 10 24.38	10 20.14	21 50 15.8	49 44.8	9.22615	0.0911	4.93	5.66	17 0 25.1		
	18 16 6 5.25	6 2.02	21 19 9.9	18 47.0	9.28070	0.1390	4.84	5.59	18 0 16.9		
	19 16 1 17.19	1 15.48	20 45 23.3	45 11.4	9.31866	0.1628	4.70	5.47	19 0 8.2		
	20 15 56 8.43	56 8.61	20 9 34.5	9 35.8	9.34126	0.1828	4.42	5.24	19 23 59.2		
	21 15 50 48.74	50 50.98	19 32 34.1	32 49.7	9.34900	0.1912	-2.80	+4.47	20 23 50.0		
	22 15 45 28.79	45 33.02	18 55 22.0	55 51.6	9.34196	0.1872	+4.41	-5.11	21 23 40.8		
	23 15 40 19.34	40 25.25	18 19 3.7	19 45.6	9.31983	0.1638	4.70	5.46	22 23 31.7		
	24 15 35 30.48	35 37.57	17 44 44.7	45 35.7	9.28178	0.1380	4.85	5.64	23 23 23.0		
	25 15 31 10.92	31 18.56	17 13 24.6	14 20.4	9.22628	0.0904	4.94	5.74	24 23 14.8		
	26 15 27 27.50	27 35.01	16 45 52.6	46 48.8	9.15033	0.0248	5.00	5.81	25 23 7.1		
	27 15 24 25.03	24 31.77	16 22 44.9	23 37.0	9.04822	9.9376	5.02	5.84	26 23 0.1		
	28 15 22 6.26	22 11.66	16 4 23.1	5 7.3	8.90793	9.8218	5.03	5.85	27 22 53.9		
	29 15 20 32.10	20 35.73	15 50 55.1	51 28.4	8.69861	9.6922	5.03	5.85	28 22 48.4		
	30 15 19 42.00	19 43.58	15 42 17.2	42 37.6	-8.20709	9.4176	5.01	5.83	29 22 43.5		
Dec.	1 15 19 34.31	19 33.67	15 38 16.4	38 22.9	+7.94749	+8.6767	4.98	5.79	0 22 30.4		
	2 15 20 6.59	20 3.67	15 38 33.1	38 25.5	8.55176	-8.9603	4.95	5.75	1 22 36.0		
	3 15 21 15.93	21 10.76	15 42 43.5	42 22.3	8.78031	9.3364	4.91	5.70	2 22 33.2		
	4 15 22 50.21	22 51.90	15 50 21.9	49 48.0	8.91795	9.5848	4.87	5.64	3 22 30.9		
	5 15 25 13.30	25 4.00	16 1 9.0	0 16.8	9.01325	9.7003	4.83	5.58	4 22 29.2		
	6 15 27 55.14	27 44.03	16 14 18.0	13 22.9	9.08403	9.7790	4.78	5.50	5 22 27.9		
	7 15 31 1.26	30 49.12	16 29 45.5	23 42.1	9.13885	9.8353	4.73	5.42	6 22 27.1		
	8 15 34 30.80	34 16.62	16 47 1.9	45 51.8	9.18254	9.8766	4.68	5.33	7 22 26.6		
	9 15 38 19.56	38 4.13	17 5 46.4	4 31.1	9.21809	9.9069	4.63	5.22	8 22 26.5		
	10 15 42 25.98	42 9.49	17 25 40.2	24 21.0	9.24748	9.9290	4.58	5.10	9 22 26.6		
	11 15 46 48.14	46 30.77	17 46 26.6	45 4.8	9.27213	9.9446	4.53	4.96	10 22 27.0		
	12 15 51 24.35	51 6.35	18 7 50.6	6 27.4	9.29209	9.9550	4.48	4.77	11 22 27.6		
	13 15 56 13.11	55 54.41	18 29 39.0	23 15.4	9.31084	9.9611	4.43	4.49	12 22 28.5		
	14 16 1 13.11	0 53.95	18 51 40.1	50 16.9	9.32627	9.9635	4.39	-3.74	13 22 29.6		
	15 16 6 23.22	6 3.73	19 13 43.5	12 21.5	9.33970	9.9627	4.34	+4.23	14 22 30.8		
	16 16 11 42.44	11 22.72	19 35 40.1	34 20.1	9.35148	9.9691	4.30	4.55	15 22 32.1		
	17 16 17 9.91	16 50.05	19 57 22.0	56 4.5	9.36190	9.9629	4.26	4.72	16 22 33.6		
	18 16 22 44.87	22 24.06	20 18 42.0	17 27.4	9.37116	9.9444	4.22	4.83	17 22 35.3		
	19 16 28 26.66	28 6.79	20 39 33.8	38 22.5	9.37946	9.9336	4.18	4.91	18 22 37.0		
	20 16 34 14.70	33 54.94	20 59 51.9	58 44.2	9.38693	9.9206	4.14	4.07	19 22 38.9		
	21 16 40 8.48	39 48.89	21 10 31.3	18 27.5	9.39370	9.9055	4.11	5.02	20 22 40.8		
	22 16 46 7.56	45 48.20	21 38 27.5	37 27.8	9.39986	9.8882	4.07	5.06	21 22 42.9		
	23 16 52 11.54	51 52.47	21 56 36.6	55 41.1	9.40549	9.8687	4.04	5.09	22 22 45.0		
	24 16 58 20.08	58 1.34	22 13 55.0	13 3.8	9.41066	9.8468	4.01	5.11	23 22 47.2		
	25 17 4 32.26	4 14.50	22 30 19.5	29 32.6	9.41544	9.8223	3.98	5.14	24 22 49.5		
	26 17 10 49.61	10 31.68	22 45 47.1	45 4.5	9.41988	9.7951	3.95	5.16	25 22 51.8		
	27 17 17 10.08	16 52.62	22 60 15.2	59 36.8	9.42399	9.7647	3.93	5.17	26 22 54.2		
	28 17 23 34.04	23 17.08	23 13 41.4	13 7.2	9.42781	9.7306	3.90	5.19	27 22 56.7		
	29 17 30 1.20	29 44.86	23 26 3.4	25 33.3	9.43140	9.6923	3.87	5.21	28 22 59.2		
	30 17 36 31.64	36 15.78	23 37 19.0	36 52.9	9.43475	9.6490	3.85	5.22	29 23 1.8		
	31 17 43 4.91	42 49.66	23 47 26.3	47 4.1	9.43789	9.5995	3.83	5.23	30 23 4.4		
	32 17 49 40.95	49 26.33	-23 56 23.6	56 5.1	+9.44085	-9.5421	+3.80	+5.24	31 23 7.0		

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 1	h m s	m s	° ' "	° ' "					d h m
1	16 43 56.40	43 55.60	-17 37 24.2	37 51.2	+7.83639	+9.3518	+4.37	-5.08	0 22 0.8
2	16 44 11.07	44 9.43	17 32 25.3	32 49.0	8.13390	9.2780	4.35	5.06	1 21 57.1
3	16 44 35.35	44 32.22	17 28 16.0	28 35.9	8.30538	9.1925	4.33	5.04	2 21 53.5
4	16 45 8.99	45 5.56	17 24 54.4	25 10.6	8.42507	9.0916	4.32	5.02	3 21 50.1
5	16 45 51.74	45 47.41	17 22 18.3	22 30.8	8.51659	8.9671	4.32	5.00	4 21 46.9
6	16 46 43.36	46 38.10	17 20 25.6	20 34.4	8.59022	8.8007	4.31	4.99	5 21 43.8
7	16 47 43.60	47 37.40	17 19 14.6	19 19.6	8.65147	8.5389	4.30	4.95	6 21 40.8
8	16 48 52.23	48 45.10	17 18 43.6	18 44.8	8.70419	+7.8751	4.28	4.93	7 21 38.1
9	16 50 9.05	50 0.97	17 18 50.3	18 47.9	8.74953	-8.2499	4.27	4.89	8 21 35.4
10	16 51 33.78	51 24.76	17 19 32.1	19 26.2	8.78961	8.6140	4.25	4.86	9 21 32.9
11	16 53 6.20	52 56.24	17 20 46.3	20 37.0	8.82504	8.8045	4.24	4.78	10 21 30.4
12	16 54 46.05	54 35.17	17 22 30.7	22 18.3	8.85692	8.9190	4.22	4.80	11 21 28.2
13	16 56 33.11	56 21.32	17 24 43.3	24 27.8	8.88567	9.0087	4.20	4.75	12 21 26.1
14	16 58 27.15	58 14.46	17 27 22.1	27 3.6	8.91168	9.0769	4.20	4.71	13 21 24.0
15	17 0 27.90	0 14.33	17 30 24.7	30 3.5	8.93548	9.1306	4.18	4.66	14 21 22.0
16	17 2 35.18	2 20.73	17 33 48.8	33 25.0	8.95738	9.1737	4.17	4.61	15 21 20.1
17	17 4 48.78	4 33.46	17 37 32.1	37 6.0	8.97760	9.2088	4.15	4.56	16 21 18.3
18	17 7 8.50	6 52.35	17 41 32.5	41 4.3	8.99628	9.2377	4.15	4.50	17 21 16.8
19	17 9 34.15	9 17.19	17 45 47.9	45 17.9	9.01372	9.2614	4.13	4.41	18 21 15.3
20	17 12 5.56	11 47.80	17 50 16.3	49 44.7	9.03003	9.2808	4.11	4.34	19 21 13.9
21	17 14 42.55	14 24.00	17 54 55.7	54 22.6	9.04516	9.2963	4.09	4.25	20 21 12.5
22	17 17 24.91	17 5.61	17 59 44.2	59 9.9	9.05920	9.3086	4.08	4.08	21 21 11.3
23	17 20 12.44	19 52.41	18 4 30.8	4 4.5	9.07237	9.3173	4.07	3.88	22 21 10.2
24	17 23 4.97	22 44.23	18 9 40.5	9 4.5	9.08480	9.3235	4.05	-3.64	23 21 9.1
25	17 26 2.35	25 40.91	18 14 44.6	14 8.1	9.09643	9.3272	4.03	+2.68	24 21 8.1
26	17 29 4.39	28 42.29	18 19 50.4	19 13.6	9.10733	9.3279	4.02	3.59	25 21 7.1
27	17 32 10.92	31 48.19	18 24 56.0	24 19.2	9.11746	9.3265	4.00	3.86	26 21 6.3
28	17 35 21.78	34 58.43	18 29 59.9	29 23.3	9.12722	9.3235	3.99	4.01	27 21 5.6
29	17 38 36.81	38 12.87	18 35 0.8	34 24.4	9.13641	9.3180	3.97	4.19	28 21 4.9
30	17 41 55.88	41 31.36	18 39 57.0	39 21.0	9.14501	9.3093	3.95	4.26	29 21 4.2
Feb. 1	17 45 18.82	44 53.75	18 44 46.6	44 11.4	9.15312	9.2985	3.94	4.35	30 21 3.6
2	17 48 45.48	48 10.89	18 49 28.3	48 54.0	9.16077	9.2852	3.92	4.35	31 21 3.1
3	17 52 15.72	51 49.63	18 54 0.8	53 27.7	9.16818	9.2696	3.90	4.44	1 21 2.6
4	17 55 49.42	55 22.66	18 58 22.9	57 51.1	9.17509	9.2516	3.88	4.50	2 21 2.3
5	17 59 26.44	58 59.43	19 2 33.4	2 3.1	9.18139	9.2299	3.87	4.53	3 21 2.0
6	18 3 6.61	2 39.19	19 6 30.8	6 2.1	9.18750	9.2047	3.85	4.56	4 21 1.7
7	18 6 49.83	6 22.00	19 10 13.9	9 47.0	9.19332	9.1759	3.84	4.58	5 21 1.5
8	18 10 35.99	10 7.76	19 13 41.7	13 16.8	9.19889	9.1431	3.82	4.62	6 21 1.3
9	18 14 24.99	13 56.38	19 16 53.2	16 30.4	9.20414	9.1046	3.81	4.64	7 21 1.2
10	18 18 16.71	17 47.76	19 19 47.3	19 26.7	9.20915	9.0604	3.78	4.66	8 21 1.0
11	18 22 11.05	21 41.78	19 22 23.1	22 4.8	9.21393	9.0075	3.76	4.68	9 21 1.0
12	18 26 7.90	25 38.33	19 24 39.5	24 23.6	9.21838	8.9444	3.75	4.71	10 21 1.0
13	18 30 7.17	29 37.30	19 26 35.6	26 22.3	9.22276	8.8661	3.72	4.72	11 21 1.0
14	18 34 8.76	33 38.63	19 28 10.4	27 59.8	9.22682	8.7664	3.70	4.73	12 21 1.1
15	18 38 12.58	37 42.19	19 29 23.2	29 15.3	9.23063	8.6326	3.69	4.75	13 21 1.2
16	18 42 18.59	41 47.83	19 30 13.3	30 8.3	9.23432	8.4204	3.67	4.76	14 21 1.3
17	18 46 26.46	45 55.61	19 30 39.9	30 37.9	9.23777	-8.0119	3.65	4.78	15 21 1.5
18	18 50 36.36	50 5.90	19 30 42.3	30 43.3	9.24112	+7.8284	3.63	4.78	16 21 1.7
19	18 54 48.14	54 16.89	19 30 19.9	30 24.0	9.24428	8.3857	3.60	4.79	17 21 2.0
20	18 59 1.70	58 30.31	19 29 32.0	29 39.3	9.24724	8.6234	3.58	4.80	18 21 2.3
21	19 3 16.95	2 45.43	19 28 18.2	28 28.7	9.25003	8.7812	3.56	4.81	19 21 2.6
22	19 7 33.80	7 2.14	19 26 37.8	26 51.6	9.25270	8.8966	3.54	4.82	20 21 3.0
23	19 11 52.18	11 20.39	19 24 30.4	24 47.6	9.25517	8.9933	3.52	4.83	21 21 3.3
24	19 16 11.99	15 40.10	19 21 55.2	22 15.8	9.25750	9.0700	3.49	4.83	22 21 3.7
25	19 20 33.15	20 1.17	19 18 51.8	19 15.8	9.25968	9.1357	3.45	4.84	23 21 4.1
26	19 24 55.57	24 23.52	19 15 20.6	15 47.8	9.26166	9.1946	3.42	4.84	24 21 4.5
27	19 29 19.16	28 47.05	19 11 20.6	11 51.4	9.26354	9.2478	3.39	4.84	25 21 4.9
28	19 33 43.85	33 11.70	19 6 51.5	7 25.9	9.26530	9.2939	3.36	4.84	26 21 5.4
29	19 38 9.57	37 37.35	19 1 53.5	2 31.1	9.26693	9.3368	3.31	4.84	27 21 5.9
30	19 42 36.24	42 4.03	18 56 26.1	57 7.1	9.26836	9.3755	3.28	4.86	28 21 6.4
31	19 47 3.76	46 31.55	18 50 29.2	51 13.7	9.26969	9.4123	3.22	4.85	29 21 6.9
32	19 51 32.06	50 59.86	-18 44 2.3	44 50.3	+9.27089	+9.4459	+3.18	+4.85	30 21 7.4

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Polar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. 1	^h 19 ^m 42 ^s 36.24	^m 42 ^s 4.03	[°] -18 ['] 56 ["] 26.1	['] 57 ["] 7.1	+9.26836	+9.3755	+3.28	+4.86	^d 0 ^h 21 ^m 6.4
2	19 47 3.76	46 31.55	18 50 29.2	51 13.7	9.26969	9.4123	3.22	4.85	1 21 6.9
3	19 51 32.06	50 59.86	18 44 2.3	44 50.3	9.27089	9.4459	3.18	4.85	2 21 7.4
4	19 56 1.06	55 28.89	18 37 5.7	37 57.0	9.27196	9.4765	3.13	4.86	3 21 8.0
5	20 0 30.69	59 58.56	18 29 39.3	30 34.0	9.27294	9.5058	3.06	4.86	4 21 8.6
6	20 5 0.89	4 28.81	18 21 42.8	22 40.9	9.27379	9.5333	3.03	4.85	5 21 9.2
7	20 9 31.69	8 59.59	18 13 16.3	14 17.7	9.27455	9.5589	2.96	4.85	6 21 9.9
8	20 14 2.75	13 30.81	18 4 19.9	5 24.6	9.27522	9.5830	2.86	4.85	7 21 10.5
9	20 18 34.28	18 2.42	17 54 53.7	56 1.6	9.27573	9.6160	2.83	4.85	8 21 11.2
10	20 23 6.12	22 34.35	17 44 57.6	46 8.8	9.27624	9.6277	2.68	4.85	9 21 11.8
11	20 27 38.24	27 6.55	17 34 31.8	35 46.2	9.27661	9.6484	2.50	4.85	10 21 12.4
12	20 32 10.57	31 38.95	17 23 36.3	24 53.8	9.27691	9.6679	2.46	4.85	11 21 13.0
13	20 36 43.07	36 11.54	17 12 11.4	13 32.1	9.27728	9.6866	2.20	4.84	12 21 13.6
14	20 41 15.70	40 44.29	17 0 17.2	1 40.9	9.27733	9.7043	2.16	4.84	13 21 14.2
15	20 45 48.41	45 17.12	16 47 53.9	49 20.7	9.27738	9.7213	+1.38	4.83	14 21 14.8
16	20 50 21.15	49 49.97	16 35 1.8	36 31.5	9.27742	9.7372	-1.68	4.84	15 21 15.4
17	20 54 53.90	54 22.84	16 21 41.2	23 13.8	9.27742	9.7529	2.16	4.82	16 21 16.0
18	20 59 26.63	58 55.69	16 7 52.0	9 27.5	9.27733	9.7678	2.29	4.82	17 21 16.6
19	21 3 59.29	3 28.47	15 53 34.6	55 12.9	9.27721	9.7819	2.46	4.81	18 21 17.2
20	21 8 31.86	8 1.16	15 38 49.5	40 30.5	9.27702	9.7955	2.46	4.81	19 21 17.8
21	21 13 4.31	12 33.74	15 23 36.9	25 20.7	9.27696	9.8084	2.64	4.81	20 21 18.4
22	21 17 36.63	17 6.19	15 7 57.2	9 43.6	9.27658	9.8210	2.63	4.80	21 21 19.0
23	21 22 8.76	21 38.46	14 51 50.7	53 39.6	9.27626	9.8327	2.72	4.80	22 21 19.6
24	21 26 40.68	26 10.52	14 35 18.1	37 9.4	9.27591	9.8442	2.76	4.79	23 21 20.2
25	21 31 12.37	30 42.34	14 18 19.4	20 13.3	9.27554	9.8553	2.83	4.78	24 21 20.8
26	21 35 43.81	35 13.91	14 0 55.0	2 51.4	9.27511	9.8658	2.86	4.77	25 21 21.3
27	21 40 14.97	39 45.21	13 43 5.6	45 4.4	9.27461	9.8758	2.86	4.76	26 21 21.9
28	21 44 45.82	44 16.19	13 24 51.8	26 52.8	9.27413	9.8855	2.89	4.74	27 21 22.4
29	21 49 16.36	48 46.86	13 6 14.1	8 17.3	9.27365	9.8947	2.93	4.74	28 21 22.9
30	21 53 46.58	53 17.21	12 47 12.7	49 18.1	9.27304	9.9035	2.91	4.73	29 21 23.3
31	21 58 16.43	57 47.18	12 27 48.2	29 55.7	9.27247	9.9121	2.89	4.72	30 21 23.8
Apr. 1	22 2 45.94	2 16.83	12 8 1.0	10 10.5	9.27188	9.9203	2.93	4.71	0 21 24.3
2	22 7 15.06	6 46.09	11 47 51.7	50 3.1	9.27133	9.9281	2.99	4.70	1 21 24.9
3	22 11 43.82	11 14.99	11 27 20.9	29 34.1	9.27067	9.9356	2.96	4.69	2 21 25.4
4	22 16 12.18	15 43.50	11 6 29.3	8 44.1	9.27005	9.9427	2.99	4.68	3 21 26.0
5	22 20 40.15	20 11.61	10 45 17.4	47 33.9	9.26939	9.9496	2.99	4.66	4 21 26.5
6	22 25 7.71	24 39.30	10 23 45.6	26 3.8	9.26872	9.9562	2.96	4.65	5 21 27.0
7	22 29 34.87	29 6.60	10 1 54.5	4 14.3	9.26809	9.9624	2.96	4.64	6 21 27.5
8	22 34 1.64	33 33.50	9 39 44.8	42 6.0	9.26747	9.9684	2.96	4.62	7 21 28.0
9	22 38 28.03	38 0.02	9 17 17.1	19 39.7	9.26683	9.9742	2.93	4.61	8 21 28.5
10	22 42 54.04	42 26.16	8 54 31.8	56 55.8	9.26624	9.9796	2.93	4.60	9 21 29.0
11	22 47 19.69	46 51.93	8 31 29.5	33 54.9	9.26562	9.9850	2.91	4.58	10 21 29.4
12	22 51 44.97	51 17.34	8 8 10.7	10 37.3	9.26503	9.9899	2.89	4.56	11 21 29.9
13	22 56 9.90	55 42.39	7 44 36.2	47 3.9	9.26449	9.9946	2.89	4.54	12 21 30.4
14	23 0 34.50	0 7.12	7 20 46.7	23 15.4	9.26393	9.9990	2.86	4.53	13 21 30.9
15	23 4 58.77	4 31.50	6 56 42.8	59 12.4	9.26339	0.0035	2.81	4.50	14 21 31.3
16	23 9 22.73	8 55.57	6 32 24.5	34 55.2	9.26300	0.0076	2.81	4.48	15 21 31.8
17	23 13 46.45	13 19.41	6 7 52.9	10 24.4	9.26257	0.0113	2.81	4.47	16 21 32.3
18	23 18 9.91	17 42.98	5 43 8.6	45 40.9	9.26209	0.0150	2.68	4.46	17 21 32.7
19	23 22 33.11	22 6.26	5 18 12.1	20 45.2	9.26174	0.0185	2.64	4.44	18 21 33.1
20	23 26 56.11	26 29.37	4 53 3.9	55 37.8	9.26141	0.0217	2.59	4.41	19 21 33.6
21	23 31 18.92	30 52.28	4 27 44.8	30 19.4	9.26113	0.0249	2.53	4.36	20 21 34.0
22	23 35 41.57	35 15.04	4 2 15.2	4 50.7	9.26087	0.0276	2.46	4.33	21 21 34.5
23	23 40 4.07	39 37.63	3 36 36.1	39 11.9	9.26064	0.0303	2.34	4.31	22 21 34.9
24	23 44 26.45	44 0.10	3 10 47.9	13 23.9	9.26050	0.0327	2.42	4.29	23 21 35.3
25	23 48 48.74	48 22.46	2 44 51.2	47 27.5	9.26029	0.0351	1.86	4.22	24 21 35.7
26	23 53 10.94	52 44.76	2 18 46.5	21 23.1	9.26026	0.0372	1.99	4.19	25 21 36.2
27	23 57 33.11	57 7.00	1 52 34.7	55 11.6	9.26017	0.0390	-1.63	4.16	26 21 36.6
28	0 1 55.24	1 29.23	1 26 16.5	28 53.5	9.26011	0.0407	+1.68	4.08	27 21 37.1
29	0 6 17.35	5 51.41	0 59 52.5	62 29.6	9.26014	0.0422	1.99	4.03	28 21 37.5
30	0 10 39.49	10 13.62	0 33 23.3	36 0.4	9.26019	0.0435	2.16	3.99	29 21 37.9
31	0 15 1.67	14 35.87	-0 6 49.6	9 26.7	+9.26026	+0.0447	+2.38	+3.96	30 21 38.3

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
May 1	0 15 1.67	14 35.87	- 0 6 49.6	0 26.7	+9.26026	+0.0447	+2.33	+3.86	0 21 38.3
2	0 19 23.92	18 58.19	+ 0 19 48.0	17 11.1	9.26044	0.0456	2.46	3.78	1 21 38.8
3	0 23 46.27	23 20.61	0 46 28.8	43 52.1	9.26059	0.0465	2.59	3.64	2 21 39.2
4	0 28 8.74	27 43.16	1 13 12.3	10 35.8	9.26084	0.0470	2.64	3.47	3 21 39.7
5	0 32 31.37	32 5.85	1 39 57.6	37 21.5	9.26113	0.0474	2.66	+3.16	4 21 40.1
6	0 36 54.18	36 28.72	2 6 44.1	4 8.5	9.26138	0.0477	2.81	0.00	5 21 40.6
7	0 41 17.18	40 51.78	2 33 31.2	30 56.1	9.26181	0.0477	2.83	-3.08	6 21 41.0
8	0 45 40.45	45 15.10	3 0 18.3	57 43.6	9.26226	0.0477	2.86	3.46	7 21 41.4
9	0 50 4.00	49 38.70	3 27 5.0	24 30.8	9.26277	0.0476	2.83	3.75	8 21 41.8
10	0 54 27.85	54 2.61	3 53 50.4	51 16.9	9.26318	0.0470	2.93	3.86	9 21 42.3
11	0 58 51.99	58 26.81	4 20 33.4	18 0.8	9.26372	0.0462	3.01	3.90	10 21 42.7
12	1 3 16.49	2 51.34	4 47 13.4	44 41.6	9.26439	0.0453	3.03	3.94	11 21 43.2
13	1 7 41.41	7 16.31	5 13 50.0	11 19.1	9.26513	0.0445	3.04	4.03	12 21 43.7
14	1 12 6.79	11 41.74	5 40 22.9	37 52.9	9.26587	0.0433	3.06	4.10	13 21 44.2
15	1 16 32.64	16 7.64	6 6 51.2	4 22.2	9.26668	0.0420	3.08	4.16	14 21 44.7
16	1 21 59.00	20 34.04	6 33 14.3	30 46.4	9.26747	0.0404	3.14	4.19	15 21 45.2
17	1 25 25.87	25 0.95	6 59 31.3	57 4.5	9.26843	0.0386	3.14	4.22	16 21 45.7
18	1 29 53.33	29 28.45	7 25 41.6	23 16.0	9.26934	0.0367	3.19	4.26	17 21 46.2
19	1 34 21.38	33 56.54	7 51 44.8	49 20.4	9.27036	0.0347	3.21	4.33	18 21 46.7
20	1 38 50.08	38 25.27	8 17 40.1	15 17.0	9.27146	0.0323	3.21	4.35	19 21 47.2
21	1 43 19.46	42 54.68	8 43 26.6	41 4.9	9.27252	0.0298	3.23	4.38	20 21 47.7
22	1 47 49.52	47 24.79	9 9 3.8	6 43.6	9.27366	0.0271	3.26	4.41	21 21 48.3
23	1 52 20.31	51 55.62	9 34 31.0	32 12.4	9.27487	0.0241	3.28	4.45	22 21 48.9
24	1 56 51.86	56 27.21	9 59 47.4	57 30.5	9.27613	0.0210	3.29	4.46	23 21 49.5
25	2 1 24.21	0 59.61	10 24 52.6	22 37.4	9.27739	0.0176	3.31	4.48	24 21 50.1
26	2 5 57.37	5 32.81	10 49 45.8	47 32.3	9.27872	0.0141	3.32	4.51	25 21 50.7
27	2 10 31.38	10 6.85	11 14 26.4	12 14.5	9.28007	0.0102	3.33	4.53	26 21 51.3
28	2 15 6.25	14 41.76	11 38 53.4	36 43.4	9.28145	0.0060	3.34	4.55	27 21 51.9
29	2 19 42.00	19 17.54	12 3 6.1	0 58.1	9.28286	0.0017	3.35	4.57	28 21 52.5
30	2 24 18.66	23 54.26	12 27 3.9	24 57.8	9.28431	9.9971	3.36	4.59	29 21 53.2
31	2 28 56.25	28 31.90	12 50 46.2	48 42.2	9.28578	9.9923	3.36	4.61	30 21 53.9
June 1	2 33 34.78	33 10.48	13 14 12.3	12 10.5	9.28721	9.9871	3.37	4.63	0 21 54.6
2	2 38 14.25	37 50.03	13 37 21.3	35 21.7	9.28872	9.9817	3.38	4.64	1 21 55.4
3	2 42 54.70	42 30.55	14 0 12.6	58 15.4	9.29025	9.9749	3.39	4.66	2 21 56.2
4	2 47 36.15	47 12.05	14 22 45.4	20 50.4	9.29183	9.9699	3.39	4.68	3 21 56.9
5	2 52 18.62	51 54.59	14 44 59.1	43 6.4	9.29338	9.9635	3.40	4.69	4 21 57.7
6	2 57 2.11	56 38.15	15 6 52.9	5 2.8	9.29497	9.9569	3.41	4.71	5 21 58.5
7	3 1 46.65	1 22.76	15 28 26.3	26 38.6	9.29658	9.9499	3.41	4.72	6 21 59.3
8	3 6 32.25	6 8.42	15 49 38.5	47 53.3	9.29822	9.9425	3.41	4.73	7 22 0.1
9	3 11 18.93	10 55.17	16 10 28.7	8 46.1	9.29984	9.9349	3.42	4.75	8 22 0.9
10	3 16 6.69	15 43.00	16 30 56.4	29 16.4	9.30150	9.9267	3.42	4.76	9 22 1.7
11	3 20 55.55	20 31.95	16 51 0.7	49 23.4	9.30317	9.9181	3.41	4.77	10 22 2.6
12	3 25 45.51	25 22.01	17 10 40.9	9 6.3	9.30477	9.9092	3.43	4.78	11 22 3.5
13	3 30 36.56	30 13.15	17 29 56.7	28 24.8	9.30644	9.8999	3.44	4.80	12 22 4.4
14	3 35 28.74	35 5.43	17 48 47.2	47 18.1	9.30817	9.8899	3.42	4.80	13 22 5.3
15	3 40 22.06	39 58.85	18 7 11.5	5 45.2	9.30989	9.8795	3.43	4.81	14 22 6.3
16	3 45 16.49	44 53.38	18 25 9.2	23 45.5	9.31148	9.8688	3.42	4.82	15 22 7.2
17	3 50 12.05	49 49.06	18 42 39.4	41 18.7	9.31311	9.8573	3.42	4.83	16 22 8.2
18	3 55 8.72	54 45.87	18 59 41.7	58 24.0	9.31470	9.8452	3.43	4.85	17 22 9.2
19	4 0 6.50	59 43.75	19 16 15.4	15 0.6	9.31637	9.8326	3.42	4.86	18 22 10.2
20	4 5 54.0	4 42.77	19 32 19.8	31 7.9	9.31799	9.8193	3.41	4.86	19 22 11.2
21	4 10 5.41	9 42.93	19 47 54.4	46 45.5	9.31957	9.8052	3.41	4.87	20 22 12.3
22	4 15 6.51	14 44.18	20 2 58.4	1 52.5	9.32116	9.7904	3.41	4.88	21 22 13.4
23	4 20 8.70	19 46.52	20 17 31.3	16 28.4	9.32272	9.7747	3.38	4.89	22 22 14.5
24	4 25 11.95	24 49.93	20 31 32.4	30 32.5	9.32417	9.7583	3.38	4.90	23 22 15.6
25	4 30 16.21	29 54.35	20 45 1.2	44 4.2	9.32560	9.7406	3.39	4.91	24 22 16.7
26	4 35 21.48	34 59.78	20 57 57.0	57 3.0	9.32711	9.7221	3.36	4.91	25 22 17.8
27	4 40 27.77	40 6.23	21 10 19.4	9 28.4	9.32845	9.7024	3.35	4.91	26 22 19.0
28	4 45 35.00	45 13.55	21 22 7.8	21 19.7	9.32978	9.6812	3.34	4.92	27 22 20.1
29	4 50 43.16	50 22.00	21 33 21.5	32 36.4	9.33111	9.6589	3.31	4.93	28 22 21.3
30	4 55 52.23	55 31.27	21 44 0.2	43 18.0	9.33230	9.6348	3.31	4.94	29 22 22.5
31	5 1 2.15	0 41.41	+21 54 3.3	53 24.1	+9.33353	+9.6090	+3.28	-4.95	30 22 23.8

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July 1	h m s 5 1 2.15	m s 0 41.41	+21° 54' 3.3	53 24.1	+9.33353	+9.6090	+3.28	-4.95	d h m 0 22 23.8
2	5 6 12.92	5 52.41	22 3 30.3	2 54.0	9.33467	9.5811	3.25	4.95	1 22 25.1
3	5 11 24.48	11 4.20	22 12 20.7	11 47.3	9.33574	9.5512	3.22	4.95	2 22 26.4
4	5 16 36.79	16 16.73	22 20 34.3	20 3.7	9.33674	9.5183	3.20	4.96	3 22 27.6
5	5 21 49.80	21 29.97	22 28 10.5	27 42.7	9.33770	9.4825	3.18	4.96	4 22 28.9
6	5 27 3.48	26 43.90	22 35 9.0	34 44.0	9.33863	9.4436	3.13	4.96	5 22 30.2
7	5 32 17.78	31 58.44	22 41 20.6	41 7.3	9.33940	9.3946	3.11	4.97	6 22 31.5
8	5 37 32.65	37 13.56	22 47 11.6	46 52.0	9.34018	9.3503	3.06	4.97	7 22 32.8
9	5 42 48.06	42 29.23	22 52 14.7	51 57.7	9.34090	9.3045	3.01	4.97	8 22 34.1
10	5 48 3.96	47 45.39	22 56 38.7	56 24.2	9.34151	9.2266	2.99	4.98	9 22 35.4
11	5 53 20.29	53 1.98	23 0 23.2	0 11.3	9.34211	9.1523	2.89	4.97	10 22 36.7
12	5 58 37.03	58 18.98	23 3 28.0	3 18.7	9.34262	9.0591	2.81	4.99	11 22 38.0
13	6 3 54.13	3 36.37	23 5 53.3	5 46.2	9.34307	8.9306	2.56	4.99	12 22 39.4
14	6 9 11.49	8 54.02	23 7 38.5	7 33.7	9.34345	8.7711	2.59	4.99	13 22 40.7
15	6 14 29.11	14 11.91	23 8 43.5	8 41.0	9.34366	8.6049	2.53	4.99	14 22 42.1
16	6 19 46.89	19 29.98	23 9 8.4	9 8.0	9.34389	+7.5318	2.38	4.99	15 22 43.4
17	6 25 4.81	24 48.20	23 8 53.0	8 54.7	9.34407	-8.3043	+1.99	4.99	16 22 44.8
18	6 30 22.83	30 6.51	23 7 57.0	8 0.8	9.34416	8.7253	-1.38	4.99	17 22 46.1
19	6 35 40.90	35 24.88	23 6 20.3	6 26.1	9.34419	8.5102	2.16	4.99	18 22 47.5
20	6 40 58.96	40 43.23	23 4 3.1	4 10.8	9.34415	9.0364	2.46	4.99	19 22 48.8
21	6 46 16.96	46 1.53	23 1 5.6	1 15.1	9.34400	9.1379	2.64	4.99	20 22 50.2
22	6 51 34.83	51 19.71	22 57 27.6	57 38.8	9.34377	9.2166	2.68	4.99	21 22 51.5
23	6 56 52.51	56 37.71	22 53 9.2	53 22.2	9.34355	9.2460	2.23	4.99	22 22 52.9
24	7 2 9.99	1 55.49	22 48 10.4	48 25.0	9.34318	9.3454	2.89	4.98	23 22 54.2
25	7 7 27.18	7 13.00	22 42 31.5	42 47.6	9.34277	9.3067	2.56	4.98	24 22 55.6
26	7 12 44.04	12 30.16	22 36 12.7	36 30.2	9.34226	9.4422	2.99	4.98	25 22 56.9
27	7 18 0.52	17 46.97	22 29 14.2	29 33.0	9.34175	9.4838	3.06	4.98	26 22 58.3
28	7 23 16.59	23 3.34	22 21 35.8	21 55.9	9.34112	9.5217	3.10	4.97	27 22 59.6
29	7 28 32.18	28 19.24	22 13 18.0	13 39.2	9.34043	9.5557	3.14	4.96	28 23 0.9
30	7 33 47.24	33 34.62	22 4 21.1	4 43.3	9.33963	9.5869	3.16	4.96	29 23 2.2
31	7 39 1.71	39 49.40	21 54 45.7	55 8.9	9.33883	9.6160	3.20	4.96	30 23 3.6
Aug. 1	7 44 15.57	44 3.57	21 44 31.8	44 56.0	9.33776	9.6433	3.23	4.96	0 23 4.9
2	7 49 28.77	49 17.08	21 33 30.6	34 4.7	9.33655	9.6685	3.23	4.95	1 23 6.2
3	7 54 41.24	54 29.86	21 22 9.8	22 35.6	9.33595	9.6920	3.25	4.95	2 23 7.5
4	7 59 52.98	59 41.89	21 10 2.7	10 29.2	9.33494	9.7143	3.29	4.95	3 23 8.7
5	8 5 3.98	4 53.19	20 57 18.5	57 45.7	9.33365	9.7353	3.31	4.94	4 23 9.9
6	8 10 14.17	10 3.67	20 43 57.7	44 25.5	9.33267	9.7550	3.31	4.93	5 23 11.2
7	8 15 23.51	15 13.30	20 30 00.9	30 29.2	9.33151	9.7733	3.34	4.93	6 23 12.4
8	8 20 32.00	20 22.07	20 15 28.8	15 57.4	9.33023	9.7911	3.34	4.92	7 23 13.6
9	8 25 39.58	25 29.94	20 0 21.3	0 50.3	9.32886	9.8079	3.35	4.91	8 23 14.8
10	8 30 46.25	30 36.87	19 44 39.2	45 8.6	9.32767	9.8236	3.36	4.91	9 23 15.9
11	8 35 52.00	35 42.90	19 29 23.2	29 52.8	9.32634	9.8386	3.36	4.90	10 23 17.1
12	8 40 56.80	40 47.97	19 11 33.6	12 3.4	9.32477	9.8530	3.37	4.89	11 23 18.2
13	8 46 0.63	45 52.06	18 54 10.9	54 40.8	9.32356	9.8666	3.37	4.88	12 23 19.3
14	8 51 3.47	50 55.16	18 36 15.8	36 45.8	9.32215	9.8796	3.37	4.87	13 23 20.4
15	8 56 5.33	55 57.27	18 17 49.0	18 19.0	9.32075	9.8922	3.39	4.87	14 23 21.5
16	9 1 6.20	0 58.40	17 58 51.1	59 21.0	9.31927	9.9037	3.38	4.86	15 23 22.6
17	9 6 6.05	5 58.50	17 39 22.4	39 52.3	9.31781	9.9150	3.37	4.85	16 23 23.7
18	9 11 4.89	10 57.58	17 19 23.7	19 53.5	9.31637	9.9257	3.39	4.84	17 23 24.7
19	9 16 2.75	15 55.67	16 58 55.7	59 25.3	9.31489	9.9360	3.38	4.83	18 23 25.7
20	9 20 50.59	20 52.74	16 37 58.9	38 28.3	9.31343	9.9458	3.38	4.81	19 23 26.7
21	9 25 55.43	25 48.81	16 16 34.1	17 3.2	9.31195	9.9553	3.38	4.80	20 23 27.7
22	9 30 50.26	30 43.86	15 54 41.8	55 10.6	9.31045	9.9642	3.36	4.80	21 23 28.7
23	9 35 44.09	35 37.91	15 32 22.8	32 51.3	9.30904	9.9727	3.38	4.79	22 23 29.6
24	9 40 36.96	40 30.98	15 9 37.8	10 5.9	9.30752	9.9810	3.36	4.78	23 23 30.6
25	9 45 28.81	45 23.04	14 46 27.3	46 55.1	9.30607	9.9888	3.36	4.76	24 23 31.5
26	9 50 19.70	50 14.13	14 22 52.2	23 19.6	9.30467	9.9962	3.36	4.75	25 23 32.4
27	9 55 9.64	55 4.28	13 58 53.2	59 20.1	9.30321	0.0033	3.36	4.73	26 23 33.3
28	9 59 58.62	59 53.45	13 34 30.8	34 57.2	9.30180	0.0102	3.36	4.72	27 23 34.2
29	10 4 46.66	4 41.67	13 9 45.8	10 11.7	9.30034	0.0166	3.33	4.71	28 23 35.1
30	10 9 33.76	9 28.96	12 44 39.0	46 4.4	9.29901	0.0229	3.33	4.69	29 23 35.9
31	10 14 19.98	14 15.36	+12 19 11.0	19 35.9	+9.29766	-0.0298	-3.32	-4.68	30 23 36.7

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1	h m s	m s	° ' "	° ' "					d h m
2	10 19 5.32	19 0.80	+11 53 22.6	53 46.9	+9.29632	-0.0344	-3.31	-4.66	0 23 37.6
3	10 23 49.79	23 45.53	11 27 14.5	27 38.2	9.29499	0.0398	3.29	4.64	1 23 38.4
4	10 28 33.41	28 29.32	11 0 47.5	1 10.6	9.29375	0.0448	3.28	4.63	2 23 39.2
5	10 33 16.23	33 12.31	10 34 2.4	34 24.8	9.29252	0.0497	3.26	4.61	3 23 40.0
6	10 37 58.26	37 54.49	10 6 59.6	7 21.5	9.29133	0.0543	3.25	4.59	4 23 40.7
7	10 42 33.53	42 35.92	9 39 40.0	40 1.3	9.29018	0.0586	3.23	4.57	5 23 41.5
8	10 47 30.06	47 16.58	9 12 4.5	12 25.2	9.28902	0.0627	3.20	4.55	6 23 42.1
9	10 51 59.87	51 56.53	8 44 13.6	44 33.7	9.28796	0.0666	3.18	4.53	7 23 42.8
10	10 56 39.02	56 35.82	8 16 7.9	16 27.4	9.28698	0.0703	3.16	4.51	8 23 43.5
11	11 1 17.55	1 14.50	7 47 43.4	48 7.1	9.28600	0.0738	3.13	4.47	9 23 44.2
12	11 5 55.47	5 52.56	7 19 15.7	19 33.7	9.28508	0.0770	3.10	4.44	10 23 44.9
13	11 10 32.82	10 30.05	6 50 30.6	50 47.9	9.28421	0.0800	3.16	4.41	11 23 45.6
14	11 15 9.61	15 6.99	6 21 33.8	21 50.5	9.28341	0.0828	3.03	4.39	12 23 46.2
15	11 19 45.97	19 43.46	5 52 26.2	52 42.2	9.28267	0.0855	2.99	4.36	13 23 46.9
16	11 24 21.85	24 19.48	5 23 8.2	23 23.4	9.28203	0.0880	2.96	4.33	14 23 47.6
17	11 28 57.33	28 55.07	4 53 40.5	53 55.0	9.28140	0.0903	2.91	4.29	15 23 48.2
18	11 33 34.43	33 30.31	4 24 3.9	24 17.6	9.28083	0.0923	2.86	4.25	16 23 48.9
19	11 38 7.19	38 5.21	3 54 19.2	54 32.0	9.28032	0.0942	2.81	4.19	17 23 49.6
20	11 42 41.65	42 39.78	3 24 27.2	24 39.2	9.27985	0.0959	2.68	4.16	18 23 50.2
21	11 47 15.84	47 14.11	2 54 28.5	54 30.9	9.27949	0.0974	2.59	4.08	19 23 50.9
22	11 51 49.82	51 43.20	2 24 23.9	24 34.6	9.27918	0.0987	2.46	4.03	20 23 51.5
23	11 56 21.63	56 22.13	1 54 14.2	54 24.1	9.27895	0.0998	2.29	3.99	21 23 52.1
24	12 0 57.31	0 55.92	1 24 0.1	24 9.3	9.27879	0.1009	1.99	3.86	22 23 52.7
25	12 5 30.91	5 26.64	0 53 42.1	53 50.6	9.27868	0.1017	-1.38	3.71	23 23 53.3
26	12 10 4.46	10 3.30	+0 23 21.0	23 28.7	9.27865	0.1024	+1.68	3.46	24 23 53.9
27	12 14 38.00	14 36.96	-0 7 2.4	6 55.4	9.27865	0.1028	2.16	2.99	25 23 54.5
28	12 19 11.56	19 10.63	0 37 27.1	37 20.9	9.27871	0.1029	2.38	-2.38	26 23 55.1
29	12 23 45.18	23 44.36	1 7 52.2	7 46.8	9.27885	0.1030	2.53	+3.08	27 23 55.7
30	12 28 18.91	28 18.21	1 38 17.4	38 12.7	9.27903	0.1030	2.68	3.59	28 23 56.3
Oct. 1	12 32 52.78	32 52.19	2 8 42.1	8 38.1	9.27933	0.1027	2.72	3.72	29 23 56.9
2	12 37 26.85	37 26.37	2 39 5.2	39 2.0	9.27966	0.1023	2.83	3.86	30 23 57.5
3	12 42 1.14	42 0.78	3 9 26.0	9 22.6	9.28000	0.1016	2.83	3.98	1 23 58.1
4	12 46 35.72	46 35.49	3 39 43.8	39 42.3	9.28050	0.1008	2.91	4.03	2 23 58.8
5	12 51 10.59	51 10.50	4 9 57.8	9 57.2	9.28102	0.0999	2.96	4.11	3 23 59.5
6	12 55 45.81	55 45.85	4 40 7.3	40 7.5	9.28169	0.0987	3.03	4.16	4 0 0.2
7	13 0 21.42	0 21.57	5 10 11.4	10 12.4	9.28227	0.0972	3.04	4.19	5 0 0.8
8	13 4 57.47	4 57.74	5 40 9.3	40 11.0	9.28286	0.0957	3.08	4.25	6 0 1.4
9	13 9 33.98	9 34.38	6 10 0.5	10 2.9	9.28371	0.0940	3.13	4.33	7 0 2.1
10	13 14 11.00	14 11.52	6 30 44.2	39 47.4	9.28456	0.0920	3.16	4.35	8 0 2.7
11	13 18 48.58	18 49.24	7 9 19.3	9 23.5	9.28550	0.0898	3.18	4.37	9 0 3.4
12	13 23 26.77	23 27.56	7 38 45.2	38 50.3	9.28645	0.0875	3.20	4.41	10 0 4.1
13	13 28 5.59	28 6.52	8 8 1.3	8 7.1	9.28745	0.0849	3.23	4.45	11 0 4.8
14	13 33 45.08	33 46.15	8 37 6.7	37 13.3	9.28855	0.0822	3.26	4.47	12 0 5.5
15	13 37 35.30	37 36.53	9 6 0.8	6 8.3	9.28965	0.0793	3.30	4.50	13 0 6.3
16	13 42 6.26	42 7.65	9 34 42.7	34 51.1	9.29092	0.0761	3.30	4.53	14 0 7.1
17	13 46 48.04	46 49.57	10 3 11.6	3 20.8	9.29217	0.0727	3.32	4.54	15 0 7.8
18	13 51 30.65	51 32.34	10 31 26.6	31 36.6	9.29349	0.0690	3.33	4.56	16 0 8.6
19	13 56 14.13	56 15.98	10 59 27.1	59 38.0	9.29481	0.0653	3.36	4.59	17 0 9.4
20	14 0 58.50	1 0.52	11 27 12.6	27 24.3	9.29621	0.0612	3.37	4.61	18 0 10.2
21	14 5 43.81	5 45.39	11 54 41.9	54 54.4	9.29772	0.0567	3.37	4.63	19 0 11.0
22	14 10 31.11	10 32.46	12 21 54.0	22 7.4	9.29919	0.0522	3.39	4.65	20 0 11.8
23	14 15 17.40	15 19.04	12 48 48.4	49 2.6	9.30073	0.0472	3.40	4.66	21 0 12.7
24	14 20 5 7.2	20 8.43	13 15 24.2	15 39.1	9.30227	0.0421	3.41	4.67	22 0 13.5
25	14 24 56.08	24 57.98	13 41 40.8	41 56.5	9.30380	0.0368	3.42	4.70	23 0 14.4
26	14 29 45.53	29 48.62	14 7 37.5	7 53.9	9.30552	0.0310	3.43	4.72	24 0 15.3
27	14 34 37.08	34 40.37	14 33 18.1	33 30.3	9.30717	0.0249	3.45	4.73	25 0 16.2
28	14 39 29.76	39 33.25	14 58 26.9	58 44.8	9.30889	0.0185	3.45	4.74	26 0 17.1
29	14 44 23.60	44 27.30	15 23 18.1	23 36.7	9.31061	0.0119	3.45	4.76	27 0 18.1
30	14 49 18.60	49 22.59	15 47 46.1	48 5.4	9.31232	0.0049	3.46	4.78	28 0 19.1
31	14 54 14.77	54 18.91	16 11 49.9	12 9.9	9.31403	9.9975	3.47	4.79	29 0 20.1
32	14 59 12.12	59 16.49	-16 35 28.6	35 49.2	+9.31584	-9.9807	+3.46	+4.80	30 0 21.1

FOR WASHINGTON MEAN NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Mean Noon.	At Transit.	At Mean Noon.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. 1	15 4 10.70	4 15.29	+16 58 41.5	59 2.7	+9.31756	-9.9814	+3.46	+4.81	d h m 1 0 22.1
2	15 9 10.47	9 15.29	17 21 27.7	21 49.4	9.31928	9.9729	3.47	4.82	2 0 23.1
3	15 14 11.45	14 16.52	17 43 46.6	44 8.9	9.32107	9.9639	3.47	4.84	3 0 24.2
4	15 19 13.67	19 18.99	18 5 37.3	6 0.1	9.32287	9.9544	3.47	4.85	4 0 25.3
5	15 24 17.13	24 22.70	18 26 59.0	27 22.2	9.32461	9.9446	3.47	4.86	5 0 26.4
6	15 29 21.81	29 27.64	18 47 51.0	48 14.6	9.32634	9.9341	3.47	4.87	6 0 27.5
7	15 34 27.71	34 33.82	19 8 12.5	8 36.5	9.32810	9.9230	3.47	4.88	7 0 28.7
8	15 39 34.85	39 41.24	19 28 2.6	28 27.0	9.32988	9.9115	3.46	4.90	8 0 29.9
9	15 44 43.23	44 49.90	19 47 20.6	47 45.3	9.33158	9.8993	3.46	4.91	9 0 31.1
10	15 49 52.82	49 59.79	20 6 5.8	6 30.7	9.33327	9.8864	3.46	4.91	10 0 32.4
11	15 55 3.61	55 10.88	20 24 17.3	24 42.4	9.33497	9.8730	3.46	4.93	11 0 33.6
12	16 0 15.61	0 23.19	20 41 54.7	42 19.9	9.33664	9.8588	3.46	4.94	12 0 34.9
13	16 5 28.80	5 36.69	20 58 57.2	50 22.5	9.33829	9.8438	3.43	4.94	13 0 36.2
14	16 10 43.16	10 51.36	21 15 24.0	15 49.2	9.33984	9.8280	3.43	4.95	14 0 37.5
15	16 15 58.65	16 7.17	21 31 14.5	31 30.6	9.34145	9.8112	3.40	4.96	15 0 38.8
16	16 21 15.28	21 24.11	21 46 28.0	46 52.9	9.34295	9.7934	3.41	4.96	16 0 40.1
17	16 26 33.00	26 42.17	22 1 3.8	1 28.5	9.34444	9.7746	3.41	4.97	17 0 41.5
18	16 31 51.80	32 1.29	22 15 1.4	15 25.7	9.34593	9.7547	3.37	4.98	18 0 42.8
19	16 37 11.66	37 21.49	22 28 20.3	28 44.2	9.34729	9.7335	3.36	4.99	19 0 44.2
20	16 42 32.51	42 42.69	22 40 59.7	41 23.1	9.34862	9.7106	3.35	5.00	20 0 45.6
21	16 47 54.32	48 4.84	22 52 58.9	53 21.7	9.34999	9.6862	3.33	5.00	21 0 47.0
22	16 53 17.05	53 27.91	23 4 17.5	4 39.6	9.35112	9.6601	3.30	5.00	22 0 48.4
23	16 58 40.67	58 51.90	23 14 55.1	15 16.5	9.35225	9.6321	3.28	5.01	23 0 49.9
24	17 4 5.11	4 16.71	23 24 51.2	25 11.7	9.35334	9.6013	3.23	5.01	24 0 51.4
25	17 9 30.33	9 42.29	23 34 5.1	34 24.7	9.35435	9.5685	3.20	5.02	25 0 52.9
26	17 14 56.28	15 8.61	23 42 36.7	42 55.2	9.35528	9.5390	3.16	5.02	26 0 54.4
27	17 20 22.90	20 35.60	23 50 25.3	50 42.7	9.35615	9.4921	3.10	5.03	27 0 55.9
28	17 25 50.13	26 3.19	23 57 30.7	57 46.8	9.35696	9.4478	3.09	5.03	28 0 57.4
29	17 31 17.89	31 31.31	24 3 52.4	4 7.1	9.35759	9.3973	3.01	5.03	29 0 58.9
30	17 36 46.16	36 59.94	24 9 29.9	9 43.2	9.35890	9.3408	2.91	5.03	30 1 0.4
Dec. 1	17 42 14.85	42 28.99	24 14 23.3	14 35.0	9.35970	9.2749	2.83	5.03	1 1 1.9
2	17 47 43.89	47 58.39	24 18 32.2	18 42.2	9.35911	9.1971	2.72	5.04	2 1 3.4
3	17 53 13.21	53 28.08	24 21 56.4	22 4.6	9.35944	9.1008	2.64	5.04	3 1 5.0
4	17 58 42.76	58 57.99	24 24 35.6	24 42.0	9.35975	8.9784	+2.29	5.04	4 1 6.5
5	18 4 12.49	4 28.09	24 26 30.0	26 34.3	9.35992	8.8050		5.05	5 1 8.1
6	18 9 42.31	9 58.25	24 27 39.2	27 41.3	9.35993	8.5082	-1.68	5.04	6 1 9.6
7	18 15 12.13	15 28.44	24 28 3.0	28 3.0	9.35996	-6.8830	2.46	5.04	7 1 11.2
8	18 20 41.92	20 58.57	24 27 41.5	27 39.2	9.35979	+8.4870	2.46	5.04	8 1 12.7
9	18 26 11.58	26 28.59	24 26 34.7	26 30.0	9.35969	8.7944	2.76	5.04	9 1 14.3
10	18 31 41.11	31 58.48	24 24 42.6	24 35.4	9.35943	8.9704	2.89	5.04	10 1 15.9
11	18 37 10.40	37 28.12	24 22 5.6	21 55.8	9.35905	9.0960	2.93	5.04	11 1 17.5
12	18 42 39.37	42 57.41	24 18 43.5	18 31.1	9.35860	9.1932	3.03	5.04	12 1 19.0
13	18 48 7.97	48 26.33	24 14 36.4	14 21.2	9.35806	9.2724	3.06	5.04	13 1 20.5
14	18 53 36.13	53 54.81	24 9 44.5	9 26.5	9.35745	9.3393	3.14	5.03	14 1 22.0
15	18 59 3.80	59 22.81	24 4 7.9	3 47.0	9.35673	9.3967	3.16	5.03	15 1 23.6
16	19 4 30.91	4 50.23	23 57 47.0	57 23.1	9.35599	9.4470	3.21	5.02	16 1 25.1
17	19 9 57.42	10 17.04	23 50 42.2	50 15.2	9.35508	9.4919	3.22	5.02	17 1 26.6
18	19 15 23.24	15 43.15	23 42 53.7	42 23.6	9.35418	9.5390	3.29	5.02	18 1 28.1
19	19 20 48.36	21 8.55	23 34 21.9	33 48.3	9.35319	9.5689	3.29	5.01	19 1 29.6
20	19 26 12.68	26 33.15	23 25 6.9	24 30.3	9.35213	9.6027	3.34	5.01	20 1 31.0
21	19 31 36.19	31 56.94	23 15 9.0	14 29.2	9.35095	9.6334	3.36	5.01	21 1 32.5
22	19 36 58.80	37 19.81	23 4 29.1	3 45.9	9.34971	9.6618	3.37	5.00	22 1 33.9
23	19 42 20.47	42 41.75	22 53 7.5	52 20.9	9.34844	9.6883	3.41	5.00	23 1 35.4
24	19 47 41.16	48 2.63	22 41 4.6	40 14.5	9.34699	9.7130	3.40	4.99	24 1 36.8
25	19 53 0.79	53 22.55	22 28 20.9	27 27.4	9.34563	9.7369	3.43	4.99	25 1 38.2
26	19 58 19.38	58 41.36	22 14 57.2	14 0.1	9.34412	9.7577	3.44	4.97	26 1 39.5
27	20 3 36.84	3 59.04	22 0 53.5	59 52.9	9.34256	9.7779	3.47	4.96	27 1 40.9
28	20 8 53.14	9 15.55	21 46 10.8	45 6.7	9.34093	9.7970	3.47	4.96	28 1 42.2
29	20 14 8.24	14 30.85	21 30 49.7	29 42.0	9.33926	9.8160	3.47	4.95	29 1 43.5
30	20 19 22.12	19 44.92	21 14 50.9	13 39.6	9.33754	9.8319	3.48	4.94	30 1 44.8
31	20 24 34.75	24 57.73	+20 58 15.1	57 0.3	+9.33577	+9.8479	-3.50	+4.94	31 1 46.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. 1.2	7 45 52.99	45 21.43	+25 13 54.8	15 45.4	-8.82686	+0.3904	-3.64	-4.08	d h m
2.2	7 44 15.38	43 43.59	25 19 36.8	21 25.9	8.83404	9.3728	3.58	4.15	1 12 59.7
3.2	7 42 36.34	42 4.24	25 25 13.7	27 0.7	8.84067	9.3651	3.53	4.21	3 12 48.5
4.2	7 40 55.87	40 23.46	25 30 44.2	32 29.0	8.84646	9.3564	3.48	4.26	4 12 42.9
5.2	7 39 14.15	38 41.51	25 36 8.0	37 50.1	8.85128	9.3466	3.38	4.29	5 12 37.3
6.2	7 37 31.42	36 58.60	25 41 23.9	43 3.1	8.85505	9.3352	3.27	4.32	6 12 31.7
7.2	7 35 47.92	35 14.97	25 46 31.2	48 7.3	8.85784	9.3234	3.13	4.35	7 12 26.1
8.2	7 34 3.86	33 30.88	25 51 29.3	53 1.9	8.85974	9.3089	2.92	4.38	8 12 20.5
9.2	7 32 19.45	31 46.53	25 56 17.6	57 46.5	8.86069	9.2935	-2.42	4.40	9 12 14.9
10.2	7 30 34.93	30 2.15	26 0 55.3	2 20.5	8.86067	9.2766	+2.46	4.42	10 12 9.2
11.2	7 28 50.53	28 17.94	26 5 22.0	6 43.2	8.85974	9.2582	2.90	4.44	11 12 3.6
12.2	7 27 6.45	26 34.11	26 9 37.2	10 54.3	8.85792	9.2384	3.11	4.45	12 11 57.9
13.2	7 25 22.92	24 50.91	26 13 40.6	14 53.7	8.85521	9.2171	3.26	4.46	13 11 51.3
14.2	7 23 40.13	23 8.54	26 17 32.0	18 41.1	8.85160	9.1942	3.36	4.47	14 11 46.6
15.2	7 21 58.31	21 27.20	26 21 11.2	22 16.2	8.84704	9.1700	3.45	4.48	15 11 41.0
16.2	7 20 17.66	19 47.10	26 24 38.0	25 38.7	8.84153	9.1436	3.52	4.48	16 11 35.4
17.2	7 18 38.38	18 8.39	26 27 52.1	28 48.8	8.83516	9.1152	3.58	4.49	17 11 29.8
18.2	7 17 0.65	16 31.27	26 30 53.5	31 46.3	8.82712	9.0850	3.63	4.49	18 11 24.2
19.2	7 15 24.63	14 55.91	26 33 42.4	34 31.2	8.81975	9.0528	3.67	4.49	19 11 18.7
20.2	7 13 50.50	13 22.48	26 36 18.8	37 3.4	8.81067	9.0176	3.70	4.49	20 11 13.2
21.2	7 12 18.41	11 51.14	26 38 42.4	39 23.1	8.70068	8.9795	3.73	4.49	21 11 7.7
22.2	7 10 48.52	10 22.04	26 40 53.5	41 30.4	8.78969	8.9392	3.76	4.48	22 11 2.3
23.2	7 9 20.98	8 55.32	26 42 52.2	43 25.5	8.77768	8.8934	3.78	4.47	23 10 56.9
24.2	7 7 55.92	7 31.12	26 44 38.9	45 8.4	8.764.7	8.8447	3.80	4.46	24 10 51.6
25.2	7 6 33.50	6 9.56	26 46 13.7	46 39.6	8.75039	8.7908	3.82	4.45	25 10 46.3
26.1	7 5 13.83	4 50.80	26 47 36.8	47 59.2	8.73512	8.7301	3.84	4.44	26 10 41.0
27.1	7 3 57.02	3 34.92	26 48 48.4	49 7.4	8.71864	8.6612	3.86	4.43	27 10 35.8
28.1	7 2 43.17	2 22.03	26 49 48.9	50 4.5	8.70090	8.5816	3.87	4.42	28 10 30.6
29.1	7 1 32.38	1 12.24	26 50 38.4	50 50.9	8.68181	8.4875	3.88	4.41	29 10 25.5
30.1	7 0 24.75	0 5.62	26 51 17.4	51 27.0	8.66118	8.3725	3.89	4.40	30 10 20.5
Feb. 31.1	6 59 20.37	59 2.26	26 51 46.3	51 53.0	8.63902	8.2209	3.90	4.38	31 10 15.6
1.1	6 58 19.32	58 2.21	26 52 5.4	52 9.4	8.61510	7.9970	3.91	4.37	1 10 10.7
2.1	6 57 21.66	57 5.55	26 52 15.0	52 16.3	8.58940	+7.5362	3.92	4.35	2 10 5.8
3.1	6 56 27.43	56 12.36	26 52 15.3	52 14.1	8.56168	-7.4491	3.93	4.33	3 10 1.0
4.1	6 55 36.69	55 22.66	26 52 6.9	52 3.2	8.53161	7.9420	3.93	4.31	4 9 56.2
5.1	6 54 49.47	54 36.50	26 51 50.2	51 44.0	8.49898	8.1607	3.93	4.29	5 9 51.5
6.1	6 54 5.82	53 53.88	26 51 25.3	51 16.6	8.46354	8.3003	3.93	4.27	6 9 46.8
7.1	6 53 25.73	53 14.23	26 50 52.8	50 41.7	8.42454	8.4015	3.93	4.25	7 9 42.2
8.1	6 52 49.21	52 39.37	26 50 12.8	49 59.8	8.38222	8.4801	3.93	4.23	8 9 37.7
9.1	6 52 16.28	52 7.50	26 49 25.9	49 11.0	8.33496	8.5432	3.93	4.21	9 9 33.3
10.1	6 51 46.03	51 39.19	26 48 32.3	48 15.6	8.28200	8.5052	3.93	4.18	10 9 28.9
11.1	6 51 21.14	51 14.44	26 47 32.5	47 14.1	8.22194	8.6396	3.93	4.16	11 9 24.5
12.1	6 50 58.91	50 53.24	26 46 26.7	46 6.8	8.15265	8.6780	3.93	4.14	12 9 20.2
13.1	6 50 40.20	50 35.55	26 45 15.3	44 53.9	8.07084	8.7117	3.93	4.12	13 9 15.9
14.1	6 50 24.99	50 21.32	26 43 58.4	43 35.3	7.97149	8.7423	3.92	4.09	14 9 11.7
15.1	6 50 13.22	50 10.52	26 42 36.2	42 11.7	7.84424	8.7695	3.91	4.06	15 9 7.6
16.1	6 50 4.86	50 3.11	26 41 9.0	40 43.2	7.66609	8.7939	3.91	4.04	16 9 3.6
17.1	6 49 59.86	49 50.06	26 39 37.1	39 9.9	7.36346	8.8164	3.91	4.02	17 8 59.7
18.1	6 49 58.20	49 58.31	26 38 0.4	37 31.9	-5.23928	8.8371	3.90	4.01	18 8 55.8
19.1	6 49 59.81	50 0.83	26 36 19.2	35 49.4	+7.34882	8.8557	3.89	4.00	19 8 51.9
20.1	6 50 4.62	50 6.56	26 34 33.8	34 2.8	7.64850	8.8728	3.88	3.99	20 8 48.1
21.1	6 50 12.62	50 15.45	26 32 44.3	32 12.1	7.52233	8.8891	3.88	3.98	21 8 44.3
22.1	6 50 23.75	50 27.46	26 30 50.7	30 17.4	7.94442	8.9044	3.88	3.97	22 8 40.6
23.1	6 50 37.95	50 42.53	26 28 53.2	28 18.7	8.03823	8.9190	3.87	3.96	23 8 36.9
24.1	6 50 55.19	51 0.62	26 26 51.7	26 16.1	8.11395	8.9331	3.86	3.96	24 8 33.3
25.1	6 51 15.38	51 21.67	26 24 46.4	24 9.7	8.17740	8.9465	3.85	3.96	25 8 29.8
26.1	6 51 38.51	51 45.64	26 22 37.2	21 59.5	8.23222	8.9592	3.85	3.95	26 8 26.3
27.1	6 52 4.53	52 12.49	26 20 24.2	19 45.6	8.28004	8.9713	3.84	3.95	27 8 22.8
28.1	6 52 33.39	52 42.15	26 18 7.6	17 29.0	8.32229	8.9828	3.83	3.95	28 8 19.3
29.1	6 53 5.01	53 14.59	26 15 47.4	15 6.5	8.36915	8.9939	3.82	3.95	29 8 15.9
30.1	6 53 39.38	53 49.74	26 13 23.6	12 41.4	8.39443	9.0049	3.81	3.95	30 8 12.5
31.1	6 54 16.43	53 27.57	+26 10 56.1	10 12.8	+8.42558	-9.0157	+3.80	-3.95	32 8 9.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. 1.1	6 53 5.01	53 14 59	+26 15 47.4	15 6.5	+8.36015	-8.9939	+3.82	-3.95	d h m
2.1	6 53 39.38	53 49.74	26 13 23.6	12 41.4	8.36443	9.0049	3.81	3.95	1 8 15.9
3.1	6 54 16.43	54 27.57	26 10 56.1	10 12.8	8.42558	9.0157	3.80	3.95	2 8 12.5
4.0	6 54 56.10	55 8.03	26 8 25.0	7 40.7	8.45411	9.1260	3.79	3.95	3 8 9.2
5.0	6 55 38.36	55 51.02	26 5 50.3	5 4.9	8.46927	9.1365	3.78	3.95	4 8 5.9
6.0	6 56 23.13	56 36.54	26 3 11.9	2 25.4	8.50440	9.1463	3.77	3.96	5 8 2.6
7.0	6 57 10.37	57 24.53	25 60 29.9	59 42.2	8.52702	9.1562	3.76	3.96	6 7 50.4
8.0	6 58 0.03	58 14.92	25 57 44.1	56 55.2	8.54797	9.1660	3.75	3.96	7 7 56.2
9.0	6 58 52.07	59 7.65	25 54 54.6	54 4.5	8.56747	9.1756	3.74	3.96	8 7 53.1
10.0	6 59 46.41	60 2.68	25 52 1.3	51 10.0	8.58566	9.1850	3.73	3.96	9 7 50.0
11.0	7 0 42.09	0 59.94	25 49 4.3	48 11.8	8.60270	9.1942	3.72	3.96	10 7 47.0
12.0	7 1 41.77	1 59.37	25 46 3.5	45 9.8	8.61874	9.2035	3.71	3.97	11 7 44.1
13.0	7 2 42.60	3 0.94	25 42 58.8	42 3.8	8.63375	9.2127	3.70	3.97	12 7 41.2
14.0	7 3 45.69	4 4.60	25 30 50.2	38 54.0	8.64789	9.2216	3.69	3.97	13 7 38.3
15.0	7 4 50.71	5 10.27	25 36 37.7	35 40.2	8.66125	9.2306	3.68	3.98	14 7 35.5
16.0	7 5 57.70	6 17.90	25 33 21.2	32 22.3	8.67383	9.2395	3.67	3.99	15 7 32.7
17.0	7 7 6.61	7 27.42	25 30 0.6	29 0.2	8.68578	9.2485	3.65	4.00	16 7 29.9
18.0	7 8 17.39	8 38.80	25 26 35.8	25 34.1	8.69707	9.2574	3.64	4.00	17 7 27.1
19.0	7 9 29.98	9 51.99	25 23 6.8	22 3.6	8.70775	9.2663	3.63	4.01	18 7 24.4
20.0	7 10 44.32	11 6.90	25 19 33.4	18 28.8	8.71780	9.2752	3.62	4.02	19 7 21.7
21.0	7 12 0.38	12 23.53	25 15 55.7	14 49.6	8.72737	9.2840	3.61	4.03	20 7 19.0
22.0	7 13 18.12	13 41.83	25 12 13.5	11 5.9	8.73679	9.2929	3.59	4.04	21 7 16.3
23.0	7 14 37.48	15 1.74	25 8 26.7	7 17.5	8.74554	9.3018	3.58	4.04	22 7 13.7
24.0	7 15 58.42	16 23.22	25 4 35.2	3 24.4	8.75394	9.3106	3.57	4.05	23 7 11.1
25.0	7 17 20.90	17 46.25	24 60 39.0	59 26.5	8.76200	9.3192	3.56	4.06	24 7 8.5
26.0	7 18 44.90	19 10.79	24 56 38.1	55 23.9	8.76975	9.3279	3.55	4.07	25 7 5.9
27.0	7 20 10.39	20 36.79	24 52 32.3	51 16.3	8.77717	9.3366	3.54	4.08	26 7 3.4
28.0	7 21 37.31	22 4.23	24 48 21.5	47 3.7	8.78427	9.3453	3.53	4.09	27 7 0.9
29.0	7 23 5.64	23 33.07	24 44 5.7	42 46.0	8.79110	9.3538	3.52	4.10	28 6 58.4
30.0	7 24 35.44	25 3.29	24 39 44.8	38 23.2	8.79769	9.3625	3.51	4.11	29 6 55.9
31.0	7 26 6.39	26 34.83	24 35 18.6	33 54.7	8.80399	9.3711	3.50	4.11	30 6 52.4
Apr. 1.0	7 27 38.72	28 7.66	24 30 47.1	29 21.6	8.81003	9.3796	3.49	4.11	31 6 51.0
2.0	7 29 12.34	29 41.78	24 26 10.3	24 42.7	8.81583	9.3881	3.48	4.12	1 6 48.6
3.0	7 30 47.18	31 17.13	24 21 28.1	19 58.5	8.82139	9.3965	3.46	4.12	2 6 46.2
4.0	7 32 23.23	32 53.67	24 16 40.3	15 8.7	8.82680	9.4049	3.46	4.12	3 6 43.9
5.0	7 34 0.43	34 31.38	24 11 47.0	10 13.3	8.83200	9.4131	3.45	4.12	4 6 41.6
6.0	7 35 38.83	36 10.21	24 6 48.1	5 12.2	8.83695	9.4213	3.43	4.12	5 6 39.3
7.0	7 37 18.30	37 50.16	24 1 43.5	0 5.5	8.84171	9.4293	3.41	4.14	6 6 37.0
8.0	7 38 58.86	39 31.17	23 56 33.3	54 53.1	8.84628	9.4373	3.40	4.14	7 6 34.7
9.0	7 40 40.45	41 13.21	23 51 17.3	49 34.8	8.85064	9.4453	3.39	4.14	8 6 32.5
10.0	7 42 23.05	42 56.23	23 45 55.5	44 10.8	8.85486	9.4531	3.37	4.14	9 6 30.3
11.0	7 44 6.62	44 40.25	23 40 27.9	38 41.0	8.85890	9.4609	3.35	4.14	10 6 28.1
12.0	7 45 51.15	46 25.20	23 34 54.4	33 5.2	8.86275	9.4687	3.34	4.15	11 6 25.9
13.0	7 47 36.58	48 11.04	23 29 15.0	27 23.4	8.86641	9.4764	3.33	4.16	12 6 23.7
14.0	7 49 22.89	49 57.77	23 23 29.5	21 35.5	8.86997	9.4838	3.32	4.17	13 6 21.5
15.0	7 51 10.06	51 45.35	23 17 38.0	15 41.6	8.87339	9.4913	3.30	4.17	14 6 19.4
16.0	7 52 58.06	53 33.75	23 11 40.4	9 41.5	8.87665	9.4987	3.29	4.17	15 6 17.2
17.0	7 54 46.85	55 22.93	23 5 36.7	3 35.3	8.87974	9.5061	3.26	4.17	16 6 15.1
18.0	7 56 36.40	57 12.85	22 59 26.8	57 23.0	8.88272	9.5133	3.25	4.17	17 6 13.0
19.0	7 58 26.68	59 3.52	22 53 10.8	51 4.4	8.88550	9.5204	3.24	4.17	18 6 10.9
20.0	8 0 17.70	0 54.91	22 46 48.5	44 29.5	8.88843	9.5277	3.23	4.17	19 6 8.8
21.0	8 2 9.43	2 47.01	22 40 19.8	38 8.2	8.89113	9.5348	3.22	4.17	20 6 6.7
22.0	8 4 1.84	4 39.79	22 33 44.8	31 30.6	8.89370	9.5417	3.21	4.17	21 6 4.6
23.0	8 5 54.90	6 33.23	22 27 3.5	24 46.6	8.89620	9.5485	3.20	4.17	22 6 2.5
24.0	8 7 48.61	8 27.31	22 20 15.9	17 56.2	8.89866	9.5553	3.19	4.18	23 6 0.5
25.0	8 9 42.96	10 22.02	22 13 21.9	10 59.4	8.90103	9.5622	3.18	4.18	24 5 58.5
26.0	8 11 37.92	12 17.33	22 6 21.4	3 56.1	8.90330	9.5688	3.17	4.18	25 5 56.5
27.0	8 13 33.47	14 13.23	21 59 14.3	56 46.2	8.90548	9.5754	3.16	4.18	26 5 54.5
28.0	8 15 29.59	16 9.71	21 52 0.8	49 29.9	8.90759	9.5819	3.15	4.18	27 5 52.5
29.0	8 17 26.27	18 6.75	21 44 40.8	42 7.0	8.90968	9.5883	3.13	4.19	28 5 50.5
30.0	8 19 23.51	20 4.33	21 37 14.2	34 37.5	8.91171	9.5949	3.12	4.19	29 5 48.5
31.0	8 21 21.29	22 2.45	+21 29 40.9	27 1.4	+8.91365	-9.5011	+3.10	-4.19	30 5 46.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.	
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.		
May	1.9	8 23 19.58	24 1.02	+21 22' 1.1"	19 19.4	+8.91550	-9.5073	+3.08	-4.19	2 5 42.5
	2.9	8 25 18.37	26 0.14	21 14 14.7	11 30.0	8.91730	9.5135	3.06	4.20	3 5 40.5
	3.9	8 27 17.64	27 59.75	21 6 21.7	3 34.0	8.91903	9.5195	3.05	4.20	4 5 38.6
	4.9	8 29 17.38	29 59.83	20 58 22.2	55 31.5	8.92071	9.5254	3.04	4.20	5 5 36.6
	5.9	8 31 17.58	32 0.35	20 50 16.0	47 22.3	8.92232	9.5314	3.02	4.20	6 5 34.7
	6.9	8 33 18.21	34 1.39	20 42 3.2	39 6.5	8.92383	9.5374	3.00	4.20	7 5 32.8
	7.9	8 35 19.25	36 2.66	20 33 43.8	30 44.1	8.92529	9.5429	2.98	4.20	8 5 30.9
	8.9	8 37 21.69	38 4.42	20 25 18.0	22 15.1	8.92672	9.5484	2.97	4.20	9 5 29.0
	9.9	8 39 22.53	40 6.56	20 16 45.7	13 39.7	8.92809	9.5539	2.95	4.20	10 5 27.1
	10.9	8 41 24.74	42 9.07	20 8 6.8	4 57.7	8.92935	9.5595	2.93	4.20	11 5 25.2
11.9	8 43 27.29	44 11.92	19 59 21.3	56 9.1	8.93056	9.5648	2.91	4.20	12 5 23.3	
12.9	8 45 31.18	46 15.10	19 50 29.4	47 14.0	8.93172	9.5701	2.89	4.20	13 5 21.4	
13.9	8 47 33.39	48 18.67	19 41 30.9	38 12.4	8.93281	9.5754	2.88	4.20	14 5 19.5	
14.9	8 49 36.90	50 22.40	19 32 25.9	29 4.3	8.93389	9.5806	2.87	4.20	15 5 17.6	
15.8	8 51 40.72	52 26.51	19 23 14.4	19 49.6	8.93494	9.5857	2.85	4.20	16 5 15.8	
16.8	8 53 44.83	54 30.90	19 13 56.5	10 28.5	8.93594	9.5907	2.83	4.20	17 5 13.9	
17.8	8 55 49.22	56 35.56	19 4 32.2	1 1.0	8.93690	9.5956	2.81	4.19	18 5 12.1	
18.8	8 57 53.89	58 40.48	18 55 1.5	51 27.1	8.93773	9.6001	2.79	4.19	19 5 10.2	
19.8	8 59 58.75	60 45.66	18 45 24.4	41 46.8	8.93855	9.6049	2.77	4.19	20 5 8.4	
20.8	9 2 3.89	2 51.09	18 35 41.0	32 0.1	8.93947	9.6100	2.76	4.19	21 5 6.5	
21.8	9 4 9.28	4 56.75	18 25 51.1	22 6.9	8.94030	9.6148	2.75	4.19	22 5 4.7	
22.8	9 6 14.90	7 2.61	18 15 54.8	12 7.3	8.94110	9.6194	2.74	4.18	23 5 2.8	
23.8	9 8 21.75	9 8.76	18 5 52.2	2 1.4	8.94180	9.6240	2.72	4.18	24 5 1.0	
24.8	9 10 26.83	11 15.11	17 55 43.2	51 49.1	8.94266	9.6285	2.71	4.18	25 4 59.1	
25.8	9 12 33.13	13 21.68	17 45 28.0	41 30.6	8.94340	9.6328	2.70	4.18	26 4 57.3	
26.8	9 14 39.64	15 23.46	17 35 6.7	31 6.0	8.94413	9.6371	2.69	4.18	27 4 55.5	
27.8	9 16 46.36	17 35.44	17 24 39.1	20 35.1	8.94483	9.6415	2.68	4.18	28 4 53.7	
28.8	9 18 53.25	19 42.62	17 14 5.2	9 57.9	8.94551	9.6458	2.67	4.18	29 4 51.9	
29.8	9 21 0.40	21 50.00	16 63 25.1	59 14.4	8.94620	9.6500	2.66	4.18	30 4 50.0	
30.8	9 23 7.72	23 57.57	16 52 38.8	48 24.8	8.94686	9.6541	2.65	4.17	31 4 48.2	
June	31.8	9 25 15.23	26 5.32	16 41 46.4	37 29.0	8.94746	9.6585	2.64	4.17	32 4 46.4
1.8	9 27 22.90	28 13.25	16 30 47.9	26 27.1	8.94803	9.6622	2.63	4.16	2 4 44.6	
2.8	9 29 33.75	3 21.35	16 19 43.4	15 19.2	8.94863	9.6661	2.62	4.16	3 4 42.8	
3.8	9 31 38.77	32 29.62	16 8 32.9	4 5.4	8.94921	9.6699	2.61	4.16	4 4 41.0	
4.8	9 33 46.96	34 38.06	15 57 16.5	52 45.6	8.94975	9.6737	2.59	4.15	5 4 39.2	
5.8	9 35 55.30	36 46.65	15 45 54.2	41 19.9	8.95024	9.6774	2.57	4.15	6 4 37.4	
6.8	9 38 3.78	38 55.38	15 34 26.1	29 48.5	8.95071	9.6811	2.55	4.14	7 4 35.6	
7.8	9 40 12.40	41 4.25	15 22 52.3	18 11.3	8.95118	9.6847	2.54	4.14	8 4 33.8	
8.8	9 42 21.16	43 13.25	15 11 12.7	6 28.4	8.95162	9.6882	2.52	4.14	9 4 32.1	
9.8	9 44 30.04	45 22.37	14 59 27.4	54 39.8	8.95201	9.6917	2.50	4.13	10 4 30.3	
10.8	9 46 39.03	47 31.69	14 47 36.5	42 45.5	8.95238	9.6951	2.48	4.13	11 4 28.5	
11.8	9 48 48.13	49 40.95	14 35 40.0	30 45.7	8.95278	9.6985	2.46	4.12	12 4 26.7	
12.8	9 50 57.36	51 50.42	14 23 38.1	18 40.4	8.95319	9.7018	2.44	4.12	13 4 25.0	
13.8	9 53 6.70	54 0.01	14 11 30.6	6 29.6	8.95356	9.7051	2.43	4.12	14 4 23.2	
14.8	9 55 16.15	56 9.70	13 59 17.7	54 13.4	8.95389	9.7082	2.42	4.11	15 4 21.4	
15.8	9 57 25.69	58 19.48	13 46 59.5	41 51.9	8.95421	9.7114	2.41	4.11	16 4 19.6	
16.8	9 59 35.33	60 29.36	13 34 36.0	29 25.0	8.95453	9.7145	2.40	4.10	17 4 17.8	
17.8	10 1 45.06	2 39.33	13 22 7.2	16 52.8	8.95485	9.7175	2.39	4.10	18 4 16.0	
18.8	10 3 54.89	4 49.40	13 9 33.1	4 15.4	8.95518	9.7206	2.38	4.10	19 4 14.2	
19.8	10 6 4.82	6 59.57	12 56 53.8	51 32.8	8.95553	9.7235	2.38	4.09	20 4 12.4	
20.8	10 8 14.86	9 9.85	12 44 9.4	38 45.0	8.95588	9.7264	2.38	4.09	21 4 10.7	
21.8	10 10 25.00	11 20.23	12 31 20.0	25 52.3	8.95622	9.7292	2.38	4.08	22 4 8.9	
22.7	10 12 35.24	13 30.71	12 18 25.6	12 54.6	8.95655	9.7320	2.38	4.07	23 4 7.1	
23.7	10 14 45.58	15 41.30	11 65 26.1	59 51.8	8.95690	9.7348	2.39	4.07	24 4 5.3	
24.7	10 16 56.03	17 51.98	11 52 21.7	46 44.1	8.95725	9.7375	2.40	4.07	25 4 3.6	
25.7	10 19 6.58	20 2.77	11 39 12.4	33 31.6	8.95758	9.7402	2.41	4.06	26 4 1.8	
26.7	10 21 17.23	22 13.66	11 25 58.3	20 14.3	8.95793	9.7428	2.42	4.05	27 4 0.1	
27.7	10 23 27.99	24 24.66	11 12 39.5	6 52.3	8.95830	9.7454	2.42	4.05	28 3 58.3	
28.7	10 25 38.86	26 35.78	10 59 15.9	53 25.5	8.95863	9.7479	2.43	4.04	29 3 56.6	
29.7	10 27 49.84	28 47.00	10 45 47.7	39 54.0	8.95899	9.7504	2.44	4.03	30 3 54.8	
30.7	10 30 0.91	30 58.32	10 32 14.9	26 17.9	8.95933	9.7527	2.45	4.03	31 3 53.1	
31.7	10 32 12.09	33 9.75	+10 18 37.6	12 37.4	+8.95971	-9.7552	+2.46	-4.02	32 3 51.4	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of G.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July ^d	^h ^m ^s	^m ^s	[°] ['] ["]	['] ["]					^d ^h ^m
1.7	10 32 12.09	33 8.54	+10 18 37.6	12 37.4	+8.96071	-0.7552	+2.46	-4.02	2 3 51.4
2.7	10 34 23.39	35 21.31	9 64 55.9	58 52.5	8.96010	9.7575	2.46	4.02	3 3 49.7
3.7	10 36 34.81	37 32.96	9 51 9.8	45 3.1	8.96045	9.7598	2.46	4.01	4 3 47.9
4.7	10 38 46.32	39 44.72	9 37 19.4	31 9.5	8.96076	9.7620	2.46	4.01	5 3 46.2
5.7	10 40 57.93	41 56.58	9 23 24.8	17 11.0	8.96109	9.7642	2.45	4.01	6 3 44.4
6.7	10 43 9.64	44 8.54	9 9 26.1	3 10.1	8.96142	9.7663	2.44	4.00	7 3 42.7
7.7	10 45 21.45	46 20.61	8 55 23.3	49 4.1	8.96175	9.7684	2.43	3.99	8 3 40.9
8.7	10 47 33.36	48 32.76	8 41 16.4	34 54.2	8.96210	9.7705	2.42	3.98	9 3 39.2
9.7	10 49 45.38	50 45.03	8 27 5.6	20 40.3	8.96246	9.7725	2.42	3.98	10 3 37.5
10.7	10 51 57.51	52 57.41	8 12 50.9	6 22.6	8.96282	9.7744	2.42	3.97	11 3 35.8
11.7	10 54 9.75	55 9.90	7 58 32.5	52 1.2	8.96317	9.7763	2.42	3.96	12 3 34.0
12.7	10 56 22.09	57 22.50	7 44 10.4	37 36.1	8.96350	9.7781	2.42	3.95	13 3 32.3
13.7	10 58 34.53	59 35.19	7 29 44.7	23 7.4	8.96384	9.7799	2.42	3.94	14 3 30.6
14.7	11 0 47.08	1 47.99	7 15 15.4	8 35.2	8.96420	9.7817	2.43	3.94	15 3 28.9
15.7	11 2 59.74	4 0.91	6 60 42.6	53 50.4	8.96454	9.7834	2.44	3.93	16 3 27.1
16.7	11 5 12.50	6 13.93	6 46 6.3	39 20.2	8.96490	9.7851	2.45	3.92	17 3 25.4
17.7	11 7 25.38	8 27.07	6 31 26.7	24 37.7	8.96531	9.7869	2.47	3.91	18 3 23.7
18.7	11 9 38.39	10 40.35	6 16 43.9	9 52.0	8.96575	9.7883	2.49	3.90	19 3 22.0
19.7	11 11 51.54	12 53.77	5 61 57.8	55 3.1	8.96621	9.7899	2.50	3.90	20 3 20.3
20.7	11 14 4.83	15 7.33	5 47 8.6	40 11.0	8.96665	9.7914	2.52	3.89	21 3 18.6
21.7	11 16 18.25	17 21.02	5 32 16.3	25 15.9	8.96711	9.7929	2.54	3.88	22 3 16.9
22.7	11 18 31.82	19 34.86	5 17 21.0	10 17.8	8.96758	9.7943	2.56	3.87	23 3 15.2
23.7	11 20 45.53	21 48.85	4 62 22.7	55 16.7	8.96806	9.7958	2.58	3.85	24 3 13.5
24.7	11 22 59.40	24 3.00	4 47 21.4	40 12.7	8.96858	9.7972	2.60	3.84	25 3 11.8
25.7	11 25 13.43	26 17.31	4 32 17.2	25 5.8	8.96912	9.7985	2.61	3.83	26 3 10.1
26.7	11 27 27.63	28 31.80	4 17 10.3	9 56.3	8.96967	9.7998	2.62	3.82	27 3 8.4
27.7	11 29 42.00	30 46.46	3 62 0.8	54 44.1	8.97020	9.8010	2.63	3.80	28 3 6.7
28.6	11 31 56.53	33 1.28	3 46 48.8	39 29.4	8.97075	9.8022	2.64	3.78	29 3 5.0
29.6	11 34 11.24	35 16.23	3 31 34.3	24 12.3	8.97131	9.8034	2.65	3.77	30 3 3.3
30.6	11 36 26.12	37 31.47	3 16 17.5	8 52.9	8.97188	9.8045	2.66	3.76	31 3 1.6
31.6	11 38 41.19	39 46.84	2 61 58.3	53 31.2	8.97247	9.8056	2.66	3.74	32 2 59.9
Aug. 1.6	11 40 56.43	42 2.39	2 45 36.9	38 7.2	8.97308	9.8066	2.66	3.72	2 2 58.2
2.6	11 43 11.87	44 18.13	2 30 13.4	22 41.2	8.97369	9.8076	2.66	3.70	3 2 56.5
3.6	11 45 27.50	46 34.07	2 14 47.8	7 13.1	8.97430	9.8086	2.67	3.67	4 2 54.8
4.6	11 47 43.32	48 50.20	1 59 20.1	51 43.0	8.97491	9.8095	2.68	3.64	5 2 53.1
5.6	11 49 59.34	51 6.53	1 43 50.4	36 11.1	8.97556	9.8104	2.69	3.61	6 2 51.5
6.6	11 52 15.56	53 23.06	1 28 19.0	20 37.4	8.97620	9.8112	2.70	3.58	7 2 49.8
7.6	11 54 31.98	55 39.80	1 12 45.9	5 2.0	8.97685	9.8119	2.70	3.56	8 2 48.2
8.6	11 56 48.61	57 56.75	0 56 11.3	49 25.1	8.97752	9.8126	2.71	3.53	9 2 46.5
9.6	11 59 5.45	60 13.92	0 41 35.2	33 46.8	8.97819	9.8133	2.72	3.50	10 2 44.9
10.6	12 1 22.50	2 31.29	0 25 57.7	18 7.1	8.97885	9.8139	2.73	3.47	11 2 43.2
11.6	12 3 39.76	4 48.89	+ 0 10 18.9	2 26.2	8.97955	9.8145	2.74	3.44	12 2 41.6
12.6	12 5 57.25	7 6.72	- 0 5 21.1	13 15.9	8.98027	9.8150	2.74	3.40	13 2 40.0
13.6	12 8 14.97	9 24.78	0 21 2.3	28 59.2	8.98102	9.8155	2.75	3.36	14 2 38.4
14.6	12 10 32.93	11 43.08	0 36 44.5	44 43.4	8.98180	9.8160	2.76	3.32	15 2 36.8
15.6	12 12 51.14	14 1.64	0 52 27.6	60 29.5	8.98257	9.8164	2.77	3.28	16 2 35.2
16.6	12 15 9.69	16 20.46	1 8 11.7	16 14.5	8.98337	9.8168	2.78	3.24	17 2 33.6
17.6	12 17 28.32	18 39.54	1 23 56.6	32 1.2	8.98419	9.8171	2.80	3.20	18 2 32.0
18.6	12 19 47.30	21 58.88	1 39 42.1	47 48.5	8.98501	9.8174	2.81	3.16	19 2 30.4
19.6	12 22 6.55	23 18.50	1 55 28.2	63 36.4	8.98587	9.8177	2.82	3.12	20 2 28.8
20.6	12 24 26.08	25 38.41	2 11 14.8	19 24.7	8.98676	9.8179	2.83	3.08	21 2 27.2
21.6	12 26 45.90	27 58.69	2 27 1.8	35 13.4	8.98764	9.8180	2.84	3.03	22 2 25.6
22.6	12 29 6.00	30 19.08	2 42 49.1	51 2.4	8.98854	9.8182	2.86	2.98	23 2 24.0
23.6	12 31 26.40	32 39.87	2 58 36.8	66 51.7	8.98950	9.8183	2.87	-2.63	24 2 22.4
24.6	12 33 47.12	35 0.98	3 14 24.7	82 41.2	8.99049	9.8184	2.88		25 2 20.8
25.6	12 36 8.16	37 22.41	3 30 12.5	38 30.6	8.99147	9.8183	2.89		26 2 19.2
26.6	12 38 29.52	39 44.17	3 46 0.2	54 19.7	8.99247	9.8183	2.90		27 2 17.6
27.6	12 40 51.21	42 6.27	4 1 47.8	10 8.8	8.99347	9.8182	2.90	+2.63	28 2 16.0
28.6	12 43 13.23	44 28.70	4 17 35.2	25 57.6	8.99448	9.8180	2.91	2.98	29 2 14.4
29.6	12 45 35.57	46 51.46	4 33 22.2	41 46.0	8.99550	9.8179	2.92	3.08	30 2 12.8
30.6	12 47 58.26	49 14.57	4 49 8.7	57 33.8	8.99657	9.8176	2.92	3.16	31 2 11.2
31.6	12 50 21.30	51 38.03	- 5 4 54.5	13 20.8	+8.99763	-0.8173	+2.92	+3.23	32 2 9.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.		
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
d	h m s	m s	° ' " d	' "					d	h m	
Sept. 1.6	12 53 44.69	54 1.85	- 5 20 39.6	29 7.1	+8.90869	-9.8169	+2.92	+3.28	2	2	8.1
2.6	12 55 8.43	56 26.03	5 36 23.9	44 52.5	8.90976	9.8165	2.93	3.33	3	2	6.6
3.5	12 57 32.53	58 50.57	5 52 7.3	63 36.8	9.00086	9.8160	2.94	3.38	4	2	5.1
4.5	12 59 57.00	61 15.43	6 7 49.5	16 20.0	9.00197	9.8155	2.95	3.43	5	2	3.6
5.5	13 2 21.84	3 40.76	6 23 30.5	32 1.9	9.00308	9.8149	2.96	3.48	6	2	2.1
6.5	13 4 47.05	6 6.42	6 39 10.3	47 42.5	9.00420	9.8143	2.96	3.53	7	2	0.6
7.5	13 7 12.64	8 32.46	6 54 43.5	63 21.6	9.00534	9.8136	2.97	3.56	8	1	59.1
8.5	13 9 38.61	10 58.89	7 10 25.4	18 59.0	9.00648	9.8129	2.98	3.59	9	1	57.6
9.5	13 12 4.97	13 25.72	7 26 0.4	34 34.6	9.00766	9.8120	2.99	3.62	10	1	56.1
10.5	13 14 31.73	15 52.96	7 41 33.6	50 8.3	9.00885	9.8112	3.00	3.65	11	1	54.6
11.5	13 16 58.90	18 20.61	7 57 4.9	65 40.1	9.01008	9.8102	3.00	3.68	12	1	53.1
12.5	13 19 26.49	20 48.63	8 12 34.2	21 9.8	9.01131	9.8093	3.01	3.71	13	1	51.6
13.5	13 21 54.50	23 17.18	8 28 1.4	36 37.3	9.01255	9.8082	3.02	3.74	14	1	50.1
14.5	13 24 22.93	25 46.11	8 43 26.2	52 2.4	9.01379	9.8071	3.03	3.76	15	1	48.7
15.5	13 26 51.79	28 15.43	8 58 43.6	67 25.1	9.01506	9.8060	3.04	3.78	16	1	47.2
16.5	13 29 21.09	30 45.30	9 14 8.5	22 45.1	9.01637	9.8048	3.04	3.80	17	1	45.8
17.5	13 31 50.85	33 15.53	9 29 25.8	38 2.4	9.01770	9.8035	3.05	3.82	18	1	44.4
18.5	13 34 21.07	35 46.32	9 44 40.3	53 16.9	9.01918	9.8021	3.06	3.84	19	1	43.0
19.5	13 36 51.75	38 17.54	9 59 51.9	68 22.5	9.02055	9.8007	3.06	3.86	20	1	41.6
20.5	13 39 22.92	40 49.25	10 15 0.6	23 37.0	9.02181	9.7993	3.06	3.88	21	1	40.2
21.5	13 41 54.58	43 21.46	10 30 6.1	38 42.2	9.02320	9.7978	3.06	3.89	22	1	39.8
22.5	13 44 26.72	45 54.15	10 45 8.4	53 44.2	9.02458	9.7962	3.07	3.90	23	1	37.4
23.5	13 46 59.35	48 27.34	11 0 7.4	8 42.7	9.02599	9.7945	3.08	3.93	24	1	36.0
24.5	13 49 32.43	51 1.04	11 15 2.7	23 37.5	9.02742	9.7927	3.09	3.95	25	1	34.6
25.5	13 52 6.12	53 35.26	11 29 54.4	38 22.6	9.02883	9.7908	3.10	3.96	26	1	33.2
26.5	13 54 40.23	56 10.00	11 44 42.4	53 15.9	9.03034	9.7891	3.10	3.97	27	1	31.9
27.5	13 57 14.96	58 45.26	11 59 26.5	67 59.2	9.03179	9.7871	3.11	3.99	28	1	30.5
28.5	13 59 50.15	61 21.04	12 14 6.4	22 38.2	9.03324	9.7850	3.11	4.01	29	1	29.2
29.5	14 2 25.87	3 57.35	12 23 42.0	37 12.8	9.03472	9.7828	3.11	4.03	30	1	27.8
30.5	14 5 2.12	6 34.19	12 43 13.2	51 43.0	9.03620	9.7806	3.11	4.05	31	1	26.5
Oct. 1.5	14 7 33.90	9 11.57	12 58 39.9	66 8.5	9.03768	9.7783	3.11	4.06	2	1	25.2
2.5	14 10 16.22	11 49.50	13 12 1.8	20 29.2	9.03915	9.7759	3.11	4.07	3	1	23.9
3.5	14 12 54.03	14 27.93	13 26 18.9	34 44.9	9.04067	9.7734	3.12	4.07	4	1	22.6
4.5	14 15 32.49	17 7.01	13 40 31.2	48 55.6	9.04218	9.7709	3.12	4.09	5	1	21.3
5.5	14 18 11.45	19 46.60	13 54 38.3	63 1.1	9.04368	9.7682	3.12	4.11	6	1	20.0
6.5	14 20 50.96	22 26.74	14 8 40.0	17 1.1	9.04518	9.7654	3.12	4.12	7	1	18.8
7.5	14 23 31.02	24 7.44	14 22 36.9	30 55.5	9.04670	9.7625	3.13	4.13	8	1	17.5
8.5	14 26 11.65	27 43.71	14 36 26.7	44 44.1	9.04824	9.7595	3.14	4.14	9	1	16.3
9.5	14 28 52.85	30 30.55	14 50 11.5	58 26.9	9.04977	9.7564	3.14	4.15	10	1	15.0
10.4	14 31 34.62	33 12.97	15 3 50.4	12 3.7	9.05132	9.7532	3.14	4.16	11	1	13.8
11.4	14 34 16.97	35 55.98	15 17 23.2	25 34.3	9.05288	9.7499	3.14	4.17	12	1	12.5
12.4	14 36 59.91	38 39.59	15 30 49.7	38 58.4	9.05445	9.7465	3.14	4.18	13	1	11.3
13.4	14 39 43.44	41 23.79	15 44 9.8	52 16.0	9.05605	9.7430	3.15	4.19	14	1	10.1
14.4	14 42 27.56	44 8.59	15 57 23.5	65 27.0	9.05761	9.7395	3.15	4.20	15	1	8.9
15.4	14 45 12.20	46 54.00	16 10 30.6	18 31.3	9.05920	9.7357	3.15	4.21	16	1	7.7
16.4	14 47 57.62	49 40.03	16 23 30.7	31 28.5	9.06079	9.7318	3.15	4.22	17	1	6.5
17.4	14 50 43.56	52 26.67	16 36 23.7	44 18.5	9.06239	9.7277	3.16	4.23	18	1	5.3
18.4	14 53 30.11	55 13.92	16 49 9.4	57 1.2	9.06399	9.7236	3.17	4.24	19	1	4.2
19.4	14 56 17.23	58 1.80	17 1 47.9	9 36.5	9.06562	9.7194	3.17	4.25	20	1	3.1
20.4	14 59 5.93	60 50.32	17 14 18.9	22 4.2	9.06723	9.7151	3.17	4.26	21	1	2.0
21.4	15 1 53.50	3 39.47	17 26 42.3	34 24.1	9.06886	9.7106	3.17	4.27	22	1	0.9
22.4	15 4 42.55	6 29.23	17 38 57.9	46 36.2	9.07046	9.7059	3.18	4.28	23	0	59.8
23.4	15 7 32.23	9 19.67	17 51 5.6	58 40.1	9.07209	9.7011	3.19	4.29	24	0	58.7
24.4	15 10 22.55	12 10.73	18 3 5.0	10 35.7	9.07371	9.6961	3.19	4.30	25	0	57.6
25.4	15 13 13.50	15 2.42	18 14 56.2	22 22.9	9.07531	9.6910	3.19	4.31	26	0	56.5
26.4	15 16 5.08	17 54.76	18 26 38.8	34 1.5	9.07692	9.6857	3.19	4.32	27	0	55.5
27.4	15 18 57.30	20 47.73	18 38 12.9	45 31.3	9.07852	9.6802	3.19	4.33	28	0	54.4
28.4	15 21 50.15	23 41.34	18 49 38.0	56 52.1	9.08011	9.6746	3.19	4.33	29	0	53.4
29.4	15 24 43.64	26 35.58	19 0 54.2	8 3.7	9.08169	9.6687	3.19	4.34	30	0	52.3
30.4	15 27 37.75	29 30.46	19 12 1.2	19 6.0	9.08329	9.6627	3.19	4.35	31	0	51.3
31.4	15 30 32.50	32 25.97	19 22 58.1	29 58.5	9.08483	9.6564	3.19	4.36	32	0	50.3
32.4	15 33 27.87	35 22.10	-19 23 46.0	40 41.4	+9.08637	-9.6500	+3.18	+4.37	33	0	49.3

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. 1.4	15 33 27.87	35 22.10	-19 33 46.0	40 41.4	+9.08637	-0.6500	+3.18	+4.37	2 0 49.3
2.4	15 36 23.87	38 18.86	19 44 24.4	51 14.6	9.08792	9.6433	3.17	4.37	3 0 48.3
3.4	15 39 20.49	41 16.25	19 54 52.8	61 37.9	9.08944	9.6365	3.17	4.38	4 0 47.3
4.4	15 42 17.73	44 14.27	20 5 11.3	11 51.0	9.09197	9.6292	3.17	4.39	5 0 46.3
5.4	15 45 15.60	47 12.91	20 15 19.5	21 53.6	9.09249	9.6219	3.17	4.40	6 0 45.4
6.4	15 48 14.08	50 12.17	20 25 17.2	31 45.6	9.09398	9.6143	3.17	4.41	7 0 44.4
7.4	15 51 13.18	53 12.04	20 35 4.2	41 26.9	9.09547	9.6064	3.17	4.41	8 0 43.5
8.4	15 54 12.89	56 12.52	20 44 40.7	50 57.3	9.09694	9.5983	3.17	4.42	9 0 42.5
9.4	15 57 13.21	59 13.62	20 54 6.3	60 16.7	9.09839	9.5899	3.17	4.43	10 0 41.6
10.4	16 0 14.12	2 15.33	21 3 20.9	9 24.9	9.09986	9.5812	3.17	4.44	11 0 40.7
11.4	16 3 15.65	5 17.65	21 12 24.1	18 21.7	9.10132	9.5721	3.17	4.44	12 0 39.8
12.4	16 6 17.79	8 23.58	21 21 16.0	27 6.9	9.10277	9.5627	3.17	4.44	13 0 38.9
13.4	16 9 23.54	11 24.12	21 29 56.4	35 40.5	9.10421	9.5531	3.17	4.45	14 0 38.0
14.4	16 12 23.89	14 24.27	21 38 25.2	44 2.3	9.10563	9.5431	3.17	4.46	15 0 37.1
15.3	16 15 27.84	17 33.02	21 46 42.0	52 12.1	9.10704	9.5336	3.17	4.47	16 0 36.3
16.3	16 18 32.38	20 33.36	21 54 46.8	60 9.7	9.10841	9.5227	3.16	4.47	17 0 35.4
17.3	16 21 37.50	23 44.28	22 2 39.4	7 54.9	9.10978	9.5104	3.15	4.47	18 0 34.6
18.3	16 24 43.21	26 50.78	22 10 19.7	15 27.7	9.11115	9.4987	3.15	4.48	19 0 33.7
19.3	16 27 49.50	29 57.86	22 17 47.4	22 47.8	9.11249	9.4865	3.14	4.49	20 0 32.9
20.3	16 30 56.36	33 5.51	22 25 2.5	29 55.0	9.11382	9.4738	3.14	4.50	21 0 32.1
21.3	16 34 3.79	36 13.73	22 32 4.9	36 49.3	9.11512	9.4606	3.13	4.50	22 0 31.3
22.3	16 37 11.77	39 22.51	22 38 54.2	43 30.4	9.11639	9.4467	3.12	4.50	23 0 30.5
23.3	16 40 20.30	42 31.83	22 45 30.3	49 58.2	9.11764	9.4323	3.11	4.51	24 0 29.7
24.3	16 43 29.37	45 41.68	22 51 53.4	56 12.7	9.11887	9.4173	3.10	4.52	25 0 28.9
25.3	16 46 33.97	48 52.06	22 58 3.1	62 13.8	9.12004	9.4015	3.09	4.52	26 0 28.1
26.3	16 49 49.10	52 2.96	23 3 59.4	8 1.2	9.12127	9.3850	3.08	4.52	27 0 27.3
27.3	16 52 59.74	55 14.37	23 9 41.8	13 34.6	9.12241	9.3673	3.07	4.52	28 0 26.6
28.3	16 56 10.87	58 26.27	23 15 10.5	18 54.2	9.12350	9.3493	3.06	4.53	29 0 25.8
29.3	16 59 22.47	61 38.63	23 20 25.4	23 59.8	9.12457	9.3301	3.05	4.54	30 0 25.1
30.3	17 2 34.54	4 51.45	23 25 26.3	28 51.3	9.12561	9.3096	3.04	4.54	31 0 24.4
Dec. 1.3	17 5 47.06	8 4.73	23 30 12.8	33 28.3	9.12661	9.2879	3.02	4.54	2 0 23.7
2.3	17 9 0.02	11 18.44	23 34 45.1	37 50.8	9.12759	9.2650	3.01	4.54	3 0 22.0
3.3	17 12 13.41	14 32.58	23 39 2.9	41 58.7	9.12856	9.2405	3.00	4.55	4 0 21.3
4.3	17 15 27.23	17 47.13	23 43 6.2	45 51.9	9.12951	9.2144	2.99	4.56	5 0 20.6
5.3	17 18 41.47	21 2.09	23 46 54.6	49 30.2	9.13043	9.1861	2.98	4.56	6 0 20.9
6.3	17 21 56.11	24 17.45	23 50 28.2	52 53.5	9.13132	9.1559	2.97	4.56	7 0 20.2
7.3	17 25 11.13	27 33.19	23 53 47.0	56 1.8	9.13213	9.1233	2.95	4.56	8 0 19.5
8.3	17 28 26.52	30 49.29	23 56 50.8	58 55.0	9.13294	9.0876	2.94	4.57	9 0 18.8
9.3	17 31 42.27	34 5.74	23 59 39.3	61 33.0	9.13373	9.0485	2.93	4.57	10 0 18.2
10.3	17 34 58.37	37 22.53	24 2 12.7	3 55.7	9.13448	9.0054	2.92	4.57	11 0 17.6
11.3	17 38 14.80	40 39.65	24 4 30.9	6 2.9	9.13521	8.9574	2.90	4.57	12 0 17.0
12.3	17 41 31.56	43 57.09	24 6 33.8	7 54.6	9.13593	8.9029	2.88	4.57	13 0 16.3
13.3	17 44 48.64	47 14.84	24 8 21.2	9 30.8	9.13661	8.8401	2.86	4.58	14 0 15.7
14.3	17 48 6.02	50 32.88	24 9 53.1	10 51.1	9.13726	8.7654	2.84	4.58	15 0 15.0
15.3	17 51 23.69	53 51.21	24 11 9.2	11 55.6	9.13788	8.6754	2.82	4.58	16 0 14.4
16.3	17 54 41.62	57 9.78	24 12 9.5	12 44.3	9.13844	8.5614	2.79	4.58	17 0 13.7
17.3	17 57 59.81	60 28.61	24 12 54.2	13 17.2	9.13901	8.4069	2.76	4.58	18 0 13.1
18.3	18 1 18.26	3 47.69	24 13 23.1	13 34.3	9.13952	8.1638	2.73	4.58	19 0 12.5
19.3	18 4 36.93	7 6.98	24 13 36.2	13 35.6	9.14001	-7.5534	2.70	4.58	20 0 11.9
20.3	18 7 55.82	10 26.48	24 13 33.4	13 20.9	9.14047	+7.8710	2.67	4.58	21 0 11.3
21.3	18 11 14.91	13 46.17	24 13 14.9	12 50.2	9.14087	8.2657	2.64	4.58	22 0 10.7
22.2	18 14 34.17	17 6.02	24 12 40.4	12 3.4	9.14125	8.4700	2.60	4.58	23 0 10.1
23.2	18 17 53.60	20 26.03	24 11 49.9	11 0.5	9.14159	8.6092	2.56	4.59	24 0 9.5
24.2	18 21 13.18	23 46.18	24 10 43.3	9 41.5	9.14189	8.7147	2.51	4.59	25 0 8.9
25.2	18 24 32.88	27 6.43	24 9 20.7	8 6.4	9.14213	8.7092	2.45	4.59	26 0 8.3
26.2	18 27 52.63	30 26.78	24 7 42.0	6 15.0	9.14233	8.8699	2.38	4.59	27 0 7.7
27.2	18 31 12.58	33 47.20	24 5 47.2	4 7.4	9.14254	8.9312	+2.28	4.59	28 0 7.0
28.2	18 34 32.56	37 7.69	24 3 36.2	1 43.6	9.14270	8.9848		4.59	29 0 6.4
29.2	18 37 52.61	40 28.23	23 61 9.2	59 3.7	9.14283	9.0322		4.58	30 0 5.8
30.2	18 41 12.71	43 48.80	23 58 26.1	56 7.6	9.14291	9.0750		4.58	31 0 5.2
31.2	18 44 32.83	47 9.37	23 55 26.9	52 55.4	9.14294	9.1141		4.58	32 0 4.6
32.2	18 47 52.96	50 29.94	-23 52 11.6	49 27.0	+9.14299	+9.1497		+4.56	33 0 4.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. ^d	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]					^d ^h ^m
0.2	20 36 32.06	36 24.22	19 13 19.4	13 48.0	+8.5844	+0.1441	+2.56	+3.61	0 1 56.5
1.2	20 37 27.43	37 19.62	19 9 58.0	10 26.5	8.5856	0.1476	2.54	3.61	1 1 53.5
2.2	20 38 22.96	38 15.17	19 6 34.9	7 3.4	8.5868	0.1510	2.52	3.61	2 1 50.5
3.2	20 39 18.64	39 10.87	19 3 10.2	3 38.8	8.5880	0.1549	2.50	3.60	3 1 47.5
4.2	20 40 14.47	40 6.71	18 59 43.8	0 12.5	8.5890	0.1580	2.48	3.60	4 1 44.5
5.2	20 41 10.43	41 2.65	18 56 15.8	56 44.6	8.5900	0.1614	2.46	3.59	5 1 41.5
6.2	20 42 6.51	41 58.78	18 52 46.2	53 15.1	8.5910	0.1644	2.44	3.59	6 1 38.5
7.2	20 43 2.72	42 55.01	18 49 15.1	49 44.1	8.5918	0.1675	2.42	3.59	7 1 35.5
8.2	20 43 59.04	43 51.35	18 45 42.5	46 11.5	8.5927	0.1708	2.40	3.58	8 1 32.5
9.2	20 44 55.47	44 47.80	18 42 8.3	42 37.4	8.5935	0.1738	2.37	3.58	9 1 29.5
10.2	20 45 52.00	45 44.36	18 38 32.6	39 1.8	8.5943	0.1771	2.34	3.57	10 1 26.5
11.2	20 46 48.63	46 41.02	18 34 55.4	35 24.7	8.5950	0.1799	2.32	3.57	11 1 23.6
12.2	20 47 45.34	47 37.76	18 31 16.8	31 46.1	8.5956	0.1826	2.29	3.56	12 1 20.6
13.2	20 48 42.13	48 34.57	18 27 36.8	28 6.2	8.5962	0.1854	2.26	3.56	13 1 17.6
14.2	20 49 38.99	49 31.46	18 23 55.3	24 24.7	8.5968	0.1882	2.23	3.55	14 1 14.6
15.2	20 50 35.93	50 28.43	18 20 12.5	20 41.9	8.5973	0.1909	2.20	3.54	15 1 11.6
16.2	20 51 32.93	51 25.46	18 16 28.3	16 57.7	8.5977	0.1933	2.17	3.54	16 1 8.6
17.2	20 52 29.98	52 22.55	18 12 42.8	13 12.2	8.5981	0.1961	2.14	3.53	17 1 5.6
18.2	20 53 27.09	53 19.60	18 8 55.9	9 25.3	8.5985	0.1988	2.11	3.52	18 1 2.6
19.2	20 54 24.25	54 16.88	18 5 7.7	5 37.1	8.5989	0.2012	2.08	3.51	19 0 59.7
20.2	20 55 21.45	55 14.11	18 1 18.1	1 47.6	8.5992	0.2037	+2.03	3.50	20 0 56.7
21.2	20 56 18.61	56 11.38	17 57 27.3	57 56.8	8.5995	0.2059		3.49	21 0 53.7
22.2	20 57 15.96	57 8.68	17 53 35.3	54 4.8	8.5998	0.2080		3.48	22 0 50.7
23.2	20 58 13.26	58 6.02	17 49 42.2	50 11.7	8.6000	0.2103		3.47	23 0 47.7
24.2	20 59 10.58	59 3.38	17 45 47.8	46 17.3	8.6002	0.2127		3.46	24 0 44.8
25.2	21 0 7.93	0 0.77	17 41 52.2	42 21.7	8.6003	0.2149		3.45	25 0 41.8
26.1	21 1 5.29	0 58.17	17 37 55.4	38 25.0	8.6003	0.2169		3.44	26 0 38.8
27.1	21 2 2.66	1 55.57	17 33 57.6	34 27.1	8.6003	0.2189		3.43	27 0 35.9
28.1	21 3 0.03	2 52.98	17 29 58.6	30 28.1	8.6003	0.2209		3.42	28 0 32.9
29.1	21 3 57.39	3 50.38	17 25 58.5	26 28.0	8.6003	0.2229		3.41	29 0 29.9
30.1	21 4 54.75	4 47.78	17 21 57.4	22 26.8	8.6002	0.2248		3.40	30 0 26.9
31.1	21 5 52.10	5 45.17	17 17 55.2	18 24.6	8.6002	0.2266		3.39	31 0 23.9
Feb. 1.1	21 6 49.44	6 42.55	17 13 52.0	14 21.3	8.6000	0.2284		3.38	1 0 20.9
2.1	21 7 46.73	7 39.90	17 9 47.8	10 17.1	8.5998	0.2302		3.37	2 0 17.9
3.1	21 8 44.02	8 37.21	17 5 42.7	6 12.0	8.5995	0.2317		3.36	3 0 15.0
4.1	21 9 41.25	9 34.48	17 1 36.8	2 6.0	8.5992	0.2332		3.34	4 0 12.0
5.1	21 10 38.45	10 31.72	16 57 30.0	57 59.0	8.5989	0.2348		3.33	5 0 9.0
6.1	21 11 35.61	11 28.91	16 53 22.3	53 51.2	8.5985	0.2363	-2.05	3.32	6 0 6.0
7.1	21 12 32.70	12 26.05	16 49 13.8	49 42.6	8.5981	0.2377	2.12	3.30	7 0 3.1
8.1	21 13 29.73	13 23.13	16 45 4.5	45 33.2	8.5976	0.2390	2.16	3.28	8 0 0.1
9.1	21 14 26.69	14 20.15	16 40 54.4	41 23.1	8.5970	0.2404	2.19	3.26	9 23 57.1
10.1	21 15 23.59	15 17.09	16 36 43.6	37 12.3	8.5964	0.2415	2.22	3.24	10 23 54.1
11.1	21 16 20.41	16 13.95	16 32 32.2	33 0.8	8.5958	0.2425	2.25	3.22	11 23 51.1
12.1	21 17 17.14	17 10.73	16 28 21.2	28 48.7	8.5952	0.2436	2.28	3.20	12 23 48.1
13.1	21 18 13.79	18 7.43	16 24 7.5	24 35.9	8.5945	0.2447	2.31	3.18	13 23 45.1
14.1	21 19 10.35	19 4.03	16 19 54.2	20 22.5	8.5938	0.2457	2.33	3.16	14 23 42.2
15.1	21 20 6.81	20 0.54	16 15 40.3	16 8.5	8.5931	0.2467	2.36	3.14	15 23 39.2
16.1	21 21 3.18	20 56.96	16 11 25.9	11 54.0	8.5923	0.2476	2.38	3.12	16 23 36.2
17.1	21 21 59.45	21 53.27	16 7 10.9	7 38.9	8.5914	0.2484	2.40	3.10	17 23 33.2
18.1	21 22 55.63	22 39.47	16 2 55.5	3 23.3	8.5906	0.2493	2.42	3.08	18 23 30.2
19.1	21 23 51.64	23 45.56	15 58 39.6	59 7.3	8.5898	0.2500	+3.04	2.44	19 23 27.2
20.1	21 24 47.57	24 41.54	15 54 23.3	54 50.9	8.5889	0.2505	2.46		20 23 24.2
21.1	21 25 43.37	25 37.40	15 50 16.7	50 34.1	8.5880	0.2512	2.48		21 23 21.2
22.1	21 26 39.05	26 33.12	15 45 49.7	46 17.0	8.5869	0.2518	2.50		22 23 18.2
23.1	21 27 34.60	27 28.72	15 41 32.3	41 59.5	8.5858	0.2524	2.52		23 23 15.1
24.1	21 28 30.02	28 24.19	15 37 14.6	37 41.7	8.5848	0.2530	2.54		24 23 12.1
25.1	21 29 25.31	29 19.53	15 32 56.6	33 23.6	8.5837	0.2534	2.56		25 23 9.1
26.1	21 30 20.45	30 14.72	15 28 38.4	29 5.3	8.5825	0.2537	2.58		26 23 6.1
27.1	21 31 15.44	31 9.76	15 24 20.1	24 46.8	8.5814	0.2539	2.59		27 23 3.1
28.1	21 32 10.28	32 4.65	15 20 1.7	20 28.2	8.5801	0.2541	2.60		28 23 0.0
29.1	21 33 4.96	32 59.39	15 15 43.1	16 9.4	8.5788	0.2544	2.61		29 23 57.0
30.1	21 33 59.48	33 53.96	15 11 24.4	11 50.6	+8.5775	+0.2544	-2.62		30 23 54.0

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. d	h m s	m s	° ' "	' "					d h m
1.1	21 33 4.96	32 59.39	-15 16 43.1	16 9.4	+8.5768	+9.2344	-2.61		0 22 57.0
2.1	21 33 59.48	33 53.96	15 11 24.4	11 50.6	8.5775	9.2544	2.62		1 22 54.0
3.1	21 34 53.83	34 48.37	15 7 5.7	7 31.7	8.5762	9.2544	2.63		2 22 51.0
4.0	21 35 48.01	35 42.60	15 2 47.0	3 12.9	8.5749	9.2543	2.64		3 22 48.0
5.0	21 36 42.01	36 36.65	14 58 28.4	58 54.1	8.5734	9.2543	2.65		4 22 44.9
6.0	21 37 35.83	37 30.52	14 54 9.8	54 35.3	8.5718	9.2542	2.66		5 22 41.9
7.0	21 38 29.45	38 24.19	14 49 51.3	50 16.7	8.5702	9.2539	2.67		6 22 38.8
8.0	21 39 22.87	39 17.67	14 45 33.0	45 58.2	8.5686	9.2536	2.68		7 22 35.8
9.0	21 40 16.10	40 10.94	14 41 14.9	41 39.9	8.5669	9.2532	2.69		8 22 32.8
10.0	21 41 9.11	41 4.00	14 36 57.0	37 21.9	8.5652	9.2528	2.70		9 22 29.7
11.0	21 42 1.92	41 57.86	14 32 39.4	33 4.1	8.5634	9.2524	2.70		10 22 26.6
12.0	21 42 54.51	42 49.50	14 28 22.1	28 46.6	8.5616	9.2518	2.71		11 22 23.6
13.0	21 43 46.88	43 41.91	14 24 5.2	24 29.5	8.5598	9.2511	2.72		12 22 20.5
14.0	21 44 39.02	44 34.10	14 19 48.7	20 12.8	8.5579	9.2504	2.73		13 22 17.5
15.0	21 45 30.93	45 26.07	14 15 32.7	15 56.6	8.5559	9.2497	2.74		14 22 14.4
16.0	21 46 22.69	46 17.80	14 11 17.0	11 40.7	8.5539	9.2489	2.74		15 22 11.3
17.0	21 47 14.04	47 9.30	14 7 1.8	7 25.3	8.5519	9.2480	2.75	-3.03	16 22 8.2
18.0	21 48 5.24	48 0.56	14 2 47.2	3 10.5	8.5498	9.2469	2.76	3.09	17 22 5.1
19.0	21 48 56.19	48 51.57	13 58 33.2	58 56.3	8.5477	9.2458	2.77	3.14	18 22 2.1
20.0	21 49 46.90	49 42.34	13 54 19.8	54 42.7	8.5456	9.2448	2.78	3.18	19 21 59.0
21.0	21 50 37.36	50 32.85	13 50 7.0	50 29.7	8.5435	9.2437	2.78	3.22	20 21 55.9
22.0	21 51 27.56	51 23.10	13 45 54.9	46 17.3	8.5412	9.2425	2.79	3.25	21 21 52.8
23.0	21 52 17.50	52 13.09	13 41 43.5	42 5.7	8.5389	9.2413	2.80	3.28	22 21 49.7
24.0	21 53 7.17	53 2.81	13 37 32.9	37 54.9	8.5366	9.2399	2.81	3.30	23 21 46.6
25.0	21 53 56.56	53 52.26	13 33 23.1	33 44.9	8.5342	9.2385	2.82	3.32	24 21 43.5
26.0	21 54 45.69	54 41.44	13 29 14.2	29 37.8	8.5317	9.2370	2.82	3.34	25 21 40.4
27.0	21 55 34.54	55 30.34	13 25 6.1	25 27.5	8.5292	9.2355	2.83	3.36	26 21 37.3
28.0	21 56 23.10	56 18.95	13 20 58.9	21 20.1	8.5266	9.2339	2.84	3.38	27 21 34.2
29.0	21 57 11.36	57 7.26	13 16 52.7	17 13.7	8.5239	9.2321	2.85	3.40	28 21 31.1
30.0	21 57 59.33	57 55.23	13 12 47.6	13 8.3	8.5212	9.2302	2.86	3.42	29 21 27.9
31.0	21 58 46.99	58 42.99	13 8 43.5	9 4.0	8.5185	9.2282	2.86	3.43	30 21 24.8
Apr. 1.0	21 59 34.35	59 30.41	13 4 40.5	5 0.8	8.5156	9.2261	2.87	3.45	31 21 21.7
2.0	22 0 21.39	0 17.50	13 0 38.6	0 58.6	8.5126	9.2239	2.88	3.46	1 21 18.5
3.0	22 1 8.11	1 4.27	12 56 38.0	56 57.7	8.5096	9.2216	2.89	3.48	2 21 15.3
4.0	22 1 54.50	1 50.72	12 52 38.7	52 58.2	8.5066	9.2193	2.90	3.49	3 21 12.1
5.0	22 2 40.57	2 36.84	12 48 40.6	49 0.0	8.5034	9.2170	2.90	3.50	4 21 9.0
6.0	22 3 26.30	3 22.62	12 44 43.9	45 3.1	8.5002	9.2145	2.91	3.52	5 21 5.8
7.0	22 4 11.69	4 8.06	12 40 48.6	41 7.5	8.4969	9.2120	2.92	3.53	6 21 2.6
8.0	22 4 56.73	4 53.15	12 36 54.7	37 13.3	8.4936	9.2093	2.92	3.54	7 20 59.4
9.0	22 5 41.42	5 37.89	12 33 2.2	33 20.6	8.4902	9.2065	2.93	3.55	8 20 56.2
10.0	22 6 25.76	6 22.23	12 29 11.3	29 29.5	8.4867	9.2037	2.93	3.56	9 20 53.0
11.0	22 7 9.73	7 6.30	12 25 21.9	25 39.9	8.4831	9.2008	2.94	3.58	10 20 49.8
12.0	22 7 53.34	7 49.96	12 21 34.1	21 51.9	8.4794	9.1978	2.95	3.59	11 20 46.6
13.0	22 8 36.58	8 33.25	12 17 47.9	18 5.5	8.4754	9.1945	2.96	3.60	12 20 43.4
14.0	22 9 19.44	9 16.16	12 14 3.5	14 20.8	8.4717	9.1911	2.97	3.61	13 20 40.2
15.0	22 10 1.92	9 58.68	12 10 20.8	10 37.8	8.4678	9.1877	2.97	3.62	14 20 37.0
16.0	22 10 44.01	10 40.82	12 6 39.8	6 56.5	8.4638	9.1842	2.98	3.63	15 20 33.8
17.0	22 11 25.72	11 22.58	12 3 0.6	3 17.0	8.4597	9.1808	2.99	3.64	16 20 30.6
18.0	22 12 7.03	12 3.94	11 59 23.2	59 39.3	8.4555	9.1771	2.99	3.65	17 20 27.3
19.0	22 12 47.94	12 44.90	11 55 47.7	55 3.6	8.4513	9.1733	3.00	3.66	18 20 24.0
20.0	22 13 28.45	13 25.46	11 52 14.1	52 29.8	8.4470	9.1684	3.00	3.67	19 20 20.8
21.0	22 14 8.56	14 5.62	11 48 42.5	48 58.0	8.4426	9.1652	3.01	3.68	20 20 17.6
22.0	22 14 48.26	14 45.36	11 45 13.0	45 28.2	8.4384	9.1618	3.01	3.69	21 20 14.3
23.0	22 15 27.54	15 24.69	11 41 45.5	42 0.5	8.4334	9.1565	3.02	3.70	22 20 11.0
24.0	22 16 6.39	16 3.59	11 38 20.0	38 34.8	8.4285	9.1521	3.02	3.71	23 20 7.7
25.0	22 16 44.81	16 42.06	11 34 56.7	35 11.3	8.4236	9.1474	3.03	3.72	24 20 4.4
26.0	22 17 22.80	17 20.10	11 31 35.7	31 50.1	8.4187	9.1425	3.03	3.73	25 20 1.1
27.0	22 18 0.35	17 57.70	11 28 17.0	28 31.1	8.4136	9.1375	3.04	3.74	26 19 57.8
28.0	22 18 37.45	18 34.85	11 25 0.5	25 14.3	8.4084	9.1323	3.04	3.75	27 19 54.5
29.0	22 19 14.09	19 11.54	11 21 46.4	21 59.9	8.4029	9.1270	3.05	3.76	28 19 51.1
30.0	22 19 50.28	19 47.77	11 18 34.7	18 48.0	8.3974	9.1215	3.05	3.76	29 19 47.8
31.0	22 20 26.08	20 23.54	-11 15 25.5	15 38.5	+8.3917	+9.1160	-3.06	-3.77	30 19 44.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.		At Sidereal Oh.	At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
May	d	n m s	m s	° ' "	° ' "						d h m
	1.9	22 21 1.24	20 58.83	-11 12 18.7	12 31.5	+8.3859	+9.1100	-3.06	-3.78		1 19 41.1
	2.9	22 21 36.01	21 33.64	11 9 14.5	9 27.0	8.3798	9.1038	3.07	3.79		2 19 37.8
	3.9	22 22 10.29	22 7.96	11 6 12.9	6 26.1	8.3736	9.0976	3.07	3.80		3 19 34.5
	4.9	22 22 44.08	22 41.80	11 3 14.0	3 25.9	8.3671	9.0913	3.08	3.80		4 19 31.1
	5.9	22 23 17.37	23 15.14	11 0 17.7	0 29.4	8.3605	9.0846	3.08	3.81		5 19 27.7
	6.9	22 23 50.15	23 47.97	10 57 24.2	57 35.7	8.3538	9.0776	3.09	3.82		6 19 24.3
	7.9	22 21 22.43	24 20.29	10 54 33.4	54 44.7	8.3468	9.0703	3.09	3.83		7 19 20.9
	8.9	22 24 54.19	24 52.09	10 51 45.5	51 56.5	8.3399	9.0630	3.10	3.84		8 19 17.5
	9.9	22 25 25.44	25 23.39	10 49 0.4	49 11.2	8.3327	9.0554	3.10	3.84		9 19 14.1
	10.9	22 25 56.16	25 54.16	10 46 18.3	46 28.8	8.3252	9.0475	3.11	3.85		10 19 10.7
	11.9	22 26 26.35	26 24.40	10 43 39.1	43 49.3	8.3176	9.0395	3.11	3.86		11 19 7.2
	12.9	22 26 56.01	26 54.10	10 41 2.9	41 12.8	8.3098	9.0311	3.12	3.87		12 19 3.8
	13.9	22 27 25.14	27 23.28	10 38 20.7	38 39.4	8.3019	9.0226	3.12	3.88		13 19 0.4
	14.9	22 27 53.73	27 51.91	10 35 59.6	36 9.1	8.2937	9.0137	3.13	3.88		14 18 56.9
	15.8	22 28 21.77	28 19.98	10 33 32.6	33 41.8	8.2852	9.0045	3.13	3.89		15 18 53.4
	16.8	22 28 49.25	28 47.51	10 31 8.7	31 17.7	8.2764	8.9951	3.14	3.90		16 18 49.9
	17.8	22 29 16.17	29 14.48	10 28 48.0	28 56.7	8.2672	8.9852	3.14	3.90		17 18 46.4
	18.8	22 29 42.53	29 40.88	10 26 30.5	26 38.9	8.2577	8.9748	3.15	3.91		18 18 42.9
	19.8	22 30 8.32	30 6.72	10 24 16.4	24 24.5	8.2481	8.9641	3.15	3.91		19 18 39.4
	20.8	22 30 33.54	30 31.99	10 22 5.5	22 13.4	8.2382	8.9529	3.15	3.92		20 18 35.9
	21.8	22 30 58.17	30 56.67	10 19 57.9	20 5.7	8.2279	8.9413	3.16	3.93		21 18 32.4
	22.8	22 31 22.22	31 20.76	10 17 53.8	18 1.3	8.2172	8.9290	3.16	3.93		22 18 28.9
	23.8	22 31 45.68	31 44.26	10 15 53.2	16 0.4	8.2061	8.9165	3.16	3.94		23 18 25.4
	24.8	22 32 8.53	32 7.16	10 13 56.1	14 3.0	8.1948	8.9034	3.17	3.94		24 18 21.8
	25.8	22 32 30.78	32 29.46	10 12 2.5	12 9.2	8.1831	8.8899	3.17	3.94		25 18 18.2
	26.8	22 32 52.43	32 51.15	10 10 12.5	10 19.0	8.1708	8.8758	3.17	3.95		26 18 14.6
	27.8	22 33 13.46	33 12.22	10 8 26.1	8 32.4	8.1580	8.8611	3.18	3.95		27 18 11.0
	28.8	22 33 33.87	33 32.67	10 6 43.3	6 49.4	8.1448	8.8453	3.18	3.95		28 18 7.4
	29.8	22 33 53.65	33 52.49	10 5 4.3	5 10.1	8.1307	8.8282	3.19	3.96		29 18 3.8
	30.8	22 34 12.79	34 11.67	10 3 20.1	3 34.6	8.1163	8.8115	3.19	3.96		30 18 0.2
June	31.8	22 34 31.28	34 30.20	10 1 57.7	2 2.9	8.1009	8.7934	3.20	3.97		31 17 56.6
	1.8	22 34 49.13	34 48.09	10 0 30.1	0 35.0	8.0851	8.7746	3.20	3.97		1 17 53.0
	2.8	22 35 6.33	35 5.33	9 59 6.4	59 11.0	8.0685	8.7544	3.20	3.98		2 17 49.4
	3.8	22 35 22.87	35 21.91	9 57 46.5	57 50.9	8.0511	8.7331	3.21	3.98		3 17 45.7
	4.8	22 35 38.74	35 37.83	9 56 30.5	56 34.8	8.0330	8.7108	3.21	3.98		4 17 42.0
	5.8	22 35 53.95	35 53.09	9 55 18.4	55 22.5	8.0140	8.6867	3.21	3.99		5 17 38.3
	6.8	22 36 8.49	36 7.67	9 54 10.4	54 14.2	7.9939	8.6611	3.22	3.99		6 17 34.6
	7.8	22 36 22.37	36 21.58	9 53 6.4	53 10.0	7.9729	8.6340	3.22	4.00		7 17 30.9
	8.8	22 36 35.57	36 34.81	9 52 6.4	52 9.8	7.9505	8.6050	3.22	4.00		8 17 27.2
	9.8	22 36 48.08	36 47.37	9 51 10.5	51 13.7	7.9268	8.5732	3.23	4.00		9 17 23.5
	10.8	22 36 59.91	36 59.25	9 50 18.7	50 21.6	7.9019	8.5398	3.23	4.01		10 17 19.8
	11.8	22 37 11.06	37 10.44	9 49 31.0	49 33.6	7.8750	8.5015	3.23	4.01		11 17 16.1
	12.8	22 37 21.52	37 20.95	9 48 47.4	48 49.8	7.8463	8.4607	3.24	4.01		12 17 12.4
	13.8	22 37 31.29	37 30.76	9 48 7.9	48 10.1	7.8152	8.4145	3.24	4.02		13 17 8.6
	14.8	22 37 40.37	37 39.87	9 47 32.6	47 34.5	7.7816	8.3627	3.24	4.02		14 17 4.8
	15.8	22 37 48.75	37 48.29	9 47 1.4	47 3.1	7.7458	8.3040	3.24	4.02		15 17 1.0
	16.8	22 37 56.42	37 56.01	9 46 34.5	46 35.9	7.7061	8.2361	3.25	4.02		16 16 57.2
	17.8	22 38 3.39	38 3.02	9 46 11.8	46 13.0	7.6618	8.1555	3.25	4.03		17 16 53.4
	18.8	22 38 9.65	38 9.32	9 45 53.4	45 54.3	7.6125	8.0538	3.25	4.03		18 16 49.6
	19.8	22 38 15.20	38 14.91	9 45 39.2	45 39.8	7.5559	7.9244	3.25	4.03		19 16 45.8
	20.8	22 38 20.33	38 19.78	9 45 21.2	45 20.6	7.4919	7.7392	3.25	4.03		20 16 41.9
	21.7	22 38 24.15	38 23.94	9 45 23.5	45 23.7	7.4156	+7.3979	3.26	4.04		21 16 38.0
	22.7	22 38 27.55	38 27.38	9 45 22.1	45 22.1	7.3230	-6.7446	3.26	4.04		22 16 34.1
	23.7	22 38 30.22	38 30.10	9 45 25.1	45 24.8	7.2052	7.5492	3.26	4.04		23 16 30.2
	24.7	22 38 32.17	38 32.10	9 45 32.4	45 31.9	7.0403	7.8147	3.26	4.04		24 16 26.3
	25.7	22 38 33.39	38 33.37	9 45 44.0	45 43.3	6.8761	7.9715	3.26	4.04		25 16 22.4
	26.7	22 38 33.89	38 33.91	9 46 0.0	45 50.0	+5.9555	8.0493	3.26	4.04		26 16 18.5
	27.7	22 38 33.66	38 33.72	9 46 20.3	46 19.1	-6.6198	8.1918	3.26	4.04		27 16 14.6
	28.7	22 38 32.70	38 32.80	9 46 44.9	46 43.5	6.9687	8.2697	3.26	4.04		28 16 10.6
	29.7	22 38 31.00	38 31.14	9 47 13.9	47 12.2	7.1576	8.3344	3.26	4.04		29 16 6.6
	30.7	22 38 28.57	38 28.75	9 47 47.2	47 45.3	7.2872	8.3918	3.26	4.03		30 16 2.6
	31.7	22 38 25.41	38 25.63	-9 48 24.8	48 22.6	-7.3804	-8.4415	-3.26	-4.03		31 15 58.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July	^d	^h ^m ^s	^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d ^h ^m
1.7	22 38 25.41	38 25.63	- 9 48 24.8	48 22.6	-7.3894	-8.4415	-3.26	-4.03	1 15 58.6
2.7	22 38 21.51	38 21.78	9 49 6.6	49 4.2	7.4710	8.4851	3.26	4.03	2 15 54.6
3.7	22 38 16.89	38 17.20	9 49 52.7	49 50.0	7.5388	8.5246	3.26	4.03	3 15 50.6
4.7	22 38 11.55	38 11.90	9 50 43.0	50 40.1	7.5975	8.5609	3.26	4.03	4 15 46.6
5.7	22 38 5.49	38 5.88	9 51 37.6	51 34.4	7.6491	8.5944	3.25	4.03	5 15 42.6
6.7	22 37 58.71	37 59.14	9 52 36.3	52 32.9	7.6953	8.6248	3.25	4.02	6 15 38.5
7.7	22 37 51.21	37 51.63	9 53 30.1	53 35.5	7.7365	8.6538	3.25	4.02	7 15 34.5
8.7	22 37 43.01	37 43.51	9 54 46.1	54 42.2	7.7736	8.6811	3.25	4.02	8 15 30.4
9.7	22 37 34.11	37 34.61	9 55 57.3	55 53.1	7.8077	8.7061	3.25	4.02	9 15 26.3
10.7	22 37 24.50	37 25.07	9 57 12.5	57 8.1	7.8394	8.7294	3.25	4.01	10 15 22.3
11.7	22 37 14.20	37 14.80	9 58 31.7	58 27.0	7.8690	8.7512	3.24	4.01	11 15 18.2
12.7	22 37 3.20	37 3.84	9 59 54.9	59 49.9	7.8962	8.7720	3.24	4.01	12 15 14.1
13.7	22 36 51.51	36 52.19	10 1 22.0	1 16.8	7.9218	8.7915	3.24	4.00	13 15 10.0
14.7	22 36 39.14	36 39.85	10 2 52.9	2 47.6	7.9457	8.8096	3.24	4.00	14 15 5.9
15.7	22 36 26.09	36 26.84	10 4 27.7	4 22.2	7.9684	8.8270	3.24	3.99	15 15 1.7
16.7	22 36 12.37	36 13.16	10 6 6.3	6 0.5	7.9895	8.8437	3.23	3.99	16 14 57.5
17.7	22 35 57.99	35 58.82	10 7 48.7	7 42.6	8.0095	8.8594	3.23	3.98	17 14 53.4
18.7	22 35 42.94	35 43.82	10 9 34.7	9 28.4	8.0285	8.8743	3.23	3.97	18 14 49.2
19.7	22 35 27.24	35 28.17	10 11 24.3	11 17.8	8.0465	8.8884	3.22	3.96	19 14 45.0
20.7	22 35 10.89	35 11.87	10 13 17.4	13 10.7	8.0635	8.9023	3.21	3.95	20 14 40.8
21.7	22 34 53.91	34 54.94	10 15 14.1	15 7.2	8.0793	8.9150	3.20	3.94	21 14 36.6
22.7	22 34 36.31	34 37.38	10 17 14.2	17 7.1	8.0947	8.9272	3.19	3.93	22 14 32.4
23.7	22 34 18.10	34 19.21	10 19 17.7	19 10.4	8.1093	8.9388	3.18	3.92	23 14 28.2
24.7	22 33 59.28	34 0.43	10 21 24.5	21 17.0	8.1230	8.9502	3.17	3.91	24 14 23.9
25.7	22 33 39.86	33 41.05	10 23 34.6	23 26.8	8.1363	8.9612	3.16	3.90	25 14 19.6
26.7	22 33 19.86	33 21.09	10 25 47.8	25 39.8	8.1489	8.9713	3.15	3.89	26 14 15.3
27.6	22 32 59.21	33 0.55	10 28 4.0	27 55.8	8.1610	8.9809	3.14	3.87	27 14 11.1
28.6	22 32 38.16	32 39.45	10 30 23.2	30 14.8	8.1724	8.9898	3.13	3.85	28 14 6.8
29.6	22 32 16.47	32 17.80	10 32 45.2	32 36.6	8.1832	8.9984	3.12	3.84	29 14 2.5
30.6	22 31 54.25	31 55.62	10 35 10.0	35 1.2	8.1933	9.0063	3.11	3.82	30 13 58.2
31.6	22 31 31.52	31 32.92	10 37 37.4	37 28.4	8.2031	9.0140	3.10	3.80	31 13 53.9
Aug. 1.6	22 31 8.28	31 9.72	10 40 7.3	39 58.1	8.2125	9.0212	3.08	3.78	1 13 49.6
2.6	22 30 44.55	30 46.03	10 42 30.7	42 30.3	8.2215	9.0280	3.07	3.76	2 13 45.3
3.6	22 30 20.34	30 21.86	10 45 14.5	45 4.9	8.2297	9.0344	3.05	3.74	3 13 41.0
4.6	22 29 55.68	29 57.24	10 47 51.5	47 41.8	8.2375	9.0406	3.03	3.72	4 13 36.6
5.6	22 29 30.59	29 32.19	10 50 30.6	50 20.7	8.2450	9.0462	3.01	3.70	5 13 32.2
6.6	22 29 5.07	29 6.71	10 53 11.7	53 1.6	8.2520	9.0511	2.99	3.67	6 13 27.9
7.6	22 28 39.15	28 40.83	10 55 54.6	55 44.3	8.2585	9.0559	2.97	3.64	7 13 23.6
8.6	22 28 12.85	28 14.56	10 58 39.3	58 28.8	8.2648	9.0607	2.95	3.63	8 13 19.2
9.6	22 27 46.17	27 47.92	11 1 25.7	1 15.0	8.2707	9.0648	2.92	3.56	9 13 14.8
10.6	22 27 19.14	27 20.92	11 4 13.6	4 2.7	8.2762	9.0685	2.90	3.52	10 13 10.4
11.6	22 26 51.79	26 53.60	11 7 2.9	6 51.9	8.2809	9.0720	2.88	3.48	11 13 6.0
12.6	22 26 24.12	26 25.96	11 9 53.5	9 42.4	8.2856	9.0753	2.86	3.44	12 13 1.6
13.6	22 25 56.18	25 58.03	11 12 45.3	12 34.1	8.2903	9.0788	2.83	3.40	13 12 57.2
14.6	22 25 27.96	25 29.83	11 15 38.1	15 26.8	8.2943	9.0803	2.80	3.35	14 12 52.8
15.6	22 24 50.48	25 1.36	11 18 31.8	18 20.4	8.2980	9.0823	2.77	3.29	15 12 48.4
16.6	22 24 30.77	24 32.66	11 21 26.3	21 14.8	8.3015	9.0843	2.74	3.21	16 12 44.0
17.6	22 24 1.84	24 3.74	11 24 21.5	24 9.9	8.3046	9.0861	2.71	-3.11	17 12 39.6
18.6	22 23 32.72	23 34.63	11 27 17.3	27 5.6	8.3074	9.0871	2.67		18 12 35.2
19.6	22 23 3.41	23 5.34	11 30 13.5	30 1.6	8.3099	9.0881	2.62		19 12 30.8
20.6	22 22 33.94	22 35.89	11 33 10.0	32 57.9	8.3120	9.0888	2.55		20 12 26.3
21.6	22 22 4.34	22 6.31	11 36 6.7	35 54.5	8.3139	9.0891	2.46		21 12 21.9
22.6	22 21 34.62	21 36.61	11 39 3.5	38 51.2	8.3156	9.0888	-2.33		22 12 17.5
23.6	22 21 4.80	21 6.82	11 42 0.0	41 47.7	8.3167	9.0883			23 12 13.1
24.6	22 20 34.91	20 36.96	11 44 56.3	44 44.0	8.3176	9.0876			24 12 8.7
25.6	22 20 4.97	20 7.04	11 47 52.3	47 40.0	8.3182	9.0866			25 12 4.2
26.6	22 19 35.01	19 37.10	11 50 47.9	50 35.6	8.3183	9.0853		+3.20	26 11 59.8
27.6	22 19 5.05	19 7.16	11 53 42.8	53 30.5	8.3182	9.0836		3.30	27 11 55.3
28.6	22 18 35.11	18 37.24	11 56 36.9	56 24.6	8.3176	9.0813		3.38	28 11 50.9
29.6	22 18 5.22	18 7.36	11 59 33.1	59 17.9	8.3167	9.0791	+2.20	3.43	29 11 46.5
30.6	22 17 35.41	17 37.55	12 2 22.4	2 10.2	8.3156	9.0768	2.39	3.47	30 11 42.0
31.6	22 17 5.69	17 7.84	-12 5 13.6	5 1.4	-3.3141	-9.0737	+2.47	+3.51	31 11 37.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	d 22 16 36.08	m 16 38.24	-12 8 3.5	7 51.3	-8.3121	-9.0700	+2.54	+3.54	d 1 11 33.2
2.5	22 16 6.62	16 8.77	12 10 51.9	10 39.7	8.3089	9.0661	2.60	3.57	2 11 28.7
3.5	22 15 37.32	15 39.47	12 13 38.7	13 26.6	8.3071	9.0620	2.65	3.61	3 11 24.3
4.5	22 15 8.22	15 10.36	12 16 23.9	16 11.9	8.3041	9.0577	2.70	3.65	4 11 19.9
5.5	22 14 39.33	14 41.46	12 19 7.4	18 55.5	8.3010	9.0527	2.74	3.69	5 11 15.5
6.5	22 14 10.66	14 12.78	12 21 48.9	21 37.2	8.2973	9.0473	2.78	3.72	6 11 11.1
7.5	22 13 42.24	13 44.35	12 24 28.4	24 16.8	8.2934	9.0417	2.82	3.75	7 11 6.7
8.5	22 13 14.09	13 16.18	12 27 5.8	26 54.3	8.2891	9.0358	2.86	3.77	8 11 2.3
9.5	22 12 46.23	12 48.30	12 29 41.1	29 29.7	8.2844	9.0297	2.89	3.79	9 10 57.9
10.5	22 12 18.68	12 20.73	12 32 14.1	32 2.8	8.2794	9.0228	2.92	3.81	10 10 53.5
11.5	22 11 51.46	11 53.50	12 34 44.6	34 33.4	8.2739	9.0157	2.95	3.82	11 10 49.1
12.5	22 11 24.59	11 26.61	12 37 12.6	37 1.6	8.2681	9.0084	2.98	3.84	12 10 44.7
13.5	22 10 58.09	11 0.09	12 39 38.1	39 27.2	8.2619	9.0006	3.01	3.86	13 10 40.3
14.5	22 10 31.97	10 33.95	12 42 0.9	41 50.1	8.2554	8.9926	3.03	3.87	14 10 35.9
15.5	22 10 6.25	10 8.21	12 44 21.0	44 10.3	8.2484	8.9838	3.05	3.88	15 10 31.6
16.5	22 9 40.96	9 42.89	12 46 38.2	46 27.6	8.2410	8.9742	3.07	3.89	16 10 27.3
17.5	22 9 16.10	9 18.01	12 48 52.4	48 42.0	8.2332	8.9645	3.09	3.90	17 10 22.9
18.5	22 8 51.70	8 53.59	12 51 3.6	50 53.4	8.2250	8.9546	3.11	3.91	18 10 18.6
19.5	22 8 27.77	8 29.63	12 53 11.7	53 1.7	8.2160	8.9441	3.12	3.92	19 10 14.3
20.5	22 8 4.34	8 6.16	12 55 16.6	55 6.9	8.2069	8.9325	3.13	3.93	20 10 10.0
21.5	22 7 41.42	7 43.20	12 57 18.2	57 8.8	8.1981	8.9208	3.14	3.94	21 10 5.7
22.5	22 7 19.03	7 21.77	12 59 16.5	59 7.4	8.1868	8.9087	3.16	3.95	22 10 1.4
23.5	22 6 57.18	6 54.88	13 1 11.4	1 2.4	8.1758	8.8955	3.17	3.96	23 9 57.1
24.5	22 6 35.88	6 37.55	13 3 2.7	2 54.1	8.1642	8.8815	3.18	3.97	24 9 52.8
25.5	22 6 15.16	6 16.78	13 4 50.5	4 42.2	8.1518	8.8669	3.19	3.98	25 9 48.5
26.5	22 5 55.03	5 56.63	13 6 34.7	6 26.7	8.1392	8.8519	3.20	3.98	26 9 44.3
27.5	22 5 35.50	5 37.03	13 8 15.3	8 7.5	8.12 6	8.8359	3.21	3.98	27 9 40.0
28.5	22 5 16.59	5 18.07	13 9 52.1	9 44.6	8.1115	8.8189	3.21	3.99	28 9 35.7
29.5	22 4 58.31	4 59.75	13 11 25.1	11 17.9	8.0962	8.8011	3.22	3.99	29 9 31.5
30.5	22 4 40.68	4 42.07	13 12 54.3	12 47.4	8.0801	8.7826	3.22	3.99	30 9 27.3
Oct. 1.5	22 4 23.70	4 25.05	13 14 19.6	14 13.0	8.0630	8.7628	3.23	3.99	1 9 23.1
2.5	22 4 7.39	4 8.69	13 15 40.9	15 34.6	8.0450	8.7420	3.23	3.99	2 9 18.9
3.5	22 3 51.76	3 53.01	13 16 58.3	16 52.2	8.0256	8.7195	3.24	4.00	3 9 14.7
4.5	22 3 36.82	3 33.01	13 18 11.6	18 5.8	8.0057	8.6953	3.24	4.00	4 9 10.5
5.5	22 3 22.58	3 23.71	13 19 20.9	19 15.3	7.9844	8.6690	3.25	4.00	5 9 6.3
6.5	22 3 9.04	3 10.11	13 20 26.0	20 20.8	7.9618	8.6416	3.25	4.00	6 9 2.1
7.5	22 2 56.21	2 57.22	13 21 27.0	21 22.2	7.9378	8.6125	3.25	4.00	7 8 57.9
8.5	22 2 44.10	2 45.06	13 22 23.9	22 19.4	7.9117	8.5812	3.26	4.00	8 8 53.8
9.4	22 2 32.72	2 33.62	13 23 16.8	23 12.6	7.8838	8.5475	3.26	4.01	9 8 49.7
10.4	22 2 22.07	2 22.91	13 24 5.5	24 1.6	7.8535	8.5109	3.26	4.01	10 8 45.6
11.4	22 2 12.16	2 12.94	13 24 49.9	24 46.4	7.8210	8.4690	3.27	4.01	11 8 41.5
12.4	22 2 2.99	2 3.71	13 25 30.2	25 27.0	7.7861	8.4225	3.27	4.01	12 8 37.4
13.4	22 1 54.57	1 55.23	13 26 6.2	26 3.4	7.7474	8.3718	3.27	4.02	13 8 33.3
14.4	22 1 46.90	1 47.50	13 26 38.0	26 35.6	7.7049	8.3129	3.27	4.02	14 8 29.3
15.4	22 1 39.98	1 40.52	13 27 5.5	27 3.5	7.6572	8.2464	3.28	4.02	15 8 25.2
16.4	22 1 33.82	1 34.39	13 27 28.8	27 27.2	7.6035	8.1679	3.28	4.02	16 8 21.2
17.4	22 1 28.42	1 28.84	13 27 47.9	27 46.7	7.5423	8.0720	3.28	4.02	17 8 17.2
18.4	22 1 23.78	1 24.14	13 28 2.8	28 1.9	7.4710	7.9488	3.28	4.02	18 8 13.2
19.4	22 1 19.91	1 20.21	13 28 13.5	28 12.9	7.3844	7.7761	3.28	4.02	19 8 9.2
20.4	22 1 16.82	1 18.05	13 28 19.9	28 19.6	7.2746	7.4751	3.28	4.02	20 8 5.2
21.4	22 1 14.50	1 14.67	13 28 22.0	28 22.1	7.1272	+5.8416	3.28	4.02	21 8 1.2
22.4	22 1 12.95	1 13.06	13 28 19.8	28 20.3	6.9023	7.4751	3.28	4.02	22 7 57.2
23.4	22 1 12.19	1 12.24	13 28 13.4	28 14.2	-6.4098	7.7710	3.28	4.02	23 7 53.3
24.4	22 1 12.21	1 12.19	13 28 2.7	28 3.8	+6.4544	7.9488	3.28	4.01	24 7 49.4
25.4	22 1 13.01	1 12.93	13 27 47.7	27 49.1	6.9171	8.0746	3.28	4.01	25 7 45.5
26.4	22 1 14.59	1 14.45	13 27 28.4	27 30.1	7.1383	8.1720	3.28	4.01	26 7 41.6
27.4	22 1 16.96	1 16.75	13 27 4.8	27 6.9	7.2825	8.2498	3.28	4.01	27 7 37.7
28.4	22 1 20.11	1 19.83	13 26 37.0	26 30.4	7.3906	8.3173	3.28	4.01	28 7 33.8
29.4	22 1 24.04	1 23.69	13 26 4.9	26 7.6	7.4771	8.3756	3.27	4.01	29 7 29.9
30.4	22 1 28.75	1 28.33	13 25 28.5	25 31.6	7.5483	8.4271	3.27	4.00	30 7 26.1
31.4	22 1 34.23	1 33.75	13 24 47.8	24 51.3	7.6995	8.4720	3.27	4.00	31 7 22.3
32.4	22 1 40.48	1 39.94	-13 24 3.0	24 6.8	+7.6631	+8.5128	+3.27	+4.00	32 7 18.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.			Apparent Declination.			Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.			
Nov. 1.4	d 22 1 40.48	m s 1 39.94	° 13 24' 3.0	24' 6.8	+7.6631	+8.5128	+3.27	+4.00	d 1 7 18.4		
2.4	22 1 47.50	1 46.90	13 23 14.1	23 18.2	7.7108	8.5500	3.27	4.00	2 7 14.6		
3.4	22 1 55.30	1 54.64	13 22 20.9	22 25.4	7.7538	8.5851	3.27	4.00	3 7 10.8		
4.4	22 2 3.86	2 3.14	13 21 23.5	21 28.4	7.7929	8.6161	3.26	3.99	4 7 7.0		
5.4	22 2 13.18	2 12.39	13 20 22.1	20 27.3	7.8284	8.6444	3.26	3.99	5 7 3.2		
6.4	22 2 23.26	2 22.40	13 19 16.6	19 22.2	7.8611	8.6709	3.26	3.99	6 6 59.5		
7.4	22 2 34.08	2 33.17	13 18 7.1	18 13.0	7.8908	8.6965	3.25	3.99	7 6 55.7		
8.4	22 2 45.65	2 44.68	13 16 53.5	16 59.7	7.9186	8.7207	3.25	3.98	8 6 51.9		
9.4	22 2 57.96	2 56.93	13 15 35.8	15 42.3	7.9448	8.7431	3.25	3.98	9 6 48.2		
10.4	22 3 11.01	3 9.92	13 14 14.1	14 20.9	7.9690	8.7643	3.24	3.98	10 6 44.5		
11.4	22 3 24.78	3 23.64	13 12 48.4	12 55.6	7.9917	8.7841	3.24	3.98	11 6 40.8		
12.4	22 3 39.26	3 38.07	13 11 18.8	11 26.3	8.0134	8.8035	3.23	3.98	12 6 37.1		
13.4	22 3 54.47	3 53.22	13 9 45.2	9 53.1	8.0339	8.8216	3.23	3.97	13 6 33.4		
14.4	22 4 10.40	4 9.10	13 8 7.8	8 15.9	8.0535	8.8390	3.23	3.97	14 6 29.7		
15.3	22 4 27.04	4 25.68	13 6 26.5	6 34.8	8.0719	8.8556	3.22	3.97	15 6 26.0		
16.3	22 4 44.37	4 42.95	13 4 41.2	4 49.9	8.0891	8.8714	3.22	3.97	16 6 22.4		
17.3	22 5 2.40	5 0.93	13 2 52.2	3 1.1	8.1057	8.8869	3.22	3.97	17 6 18.8		
18.3	22 5 21.12	5 19.60	13 0 59.3	1 8.5	8.1217	8.9015	3.21	3.96	18 6 15.2		
19.3	22 5 40.53	5 38.96	12 59 2.6	59 12.1	8.1372	8.9158	3.21	3.96	19 6 11.6		
20.3	22 6 0.62	5 59.00	12 57 2.1	57 11.9	8.1518	8.9290	3.21	3.96	20 6 8.0		
21.3	22 6 21.39	6 19.72	12 54 57.9	55 7.9	8.1659	8.9423	3.21	3.96	21 6 4.4		
22.3	22 6 42.83	6 41.12	12 52 49.9	53 0.2	8.1795	8.9553	3.20	3.95	22 6 0.8		
23.3	22 7 4.94	7 3.18	12 50 38.2	50 48.7	8.1926	8.9674	3.20	3.95	23 5 57.2		
24.3	22 7 27.71	7 25.90	12 48 22.8	48 33.6	8.2052	8.9789	3.20	3.95	24 5 53.6		
25.3	22 7 51.13	7 49.23	12 46 3.8	46 14.8	8.2170	8.9901	3.19	3.94	25 5 50.1		
26.3	22 8 15.19	8 13.30	12 43 41.2	43 52.4	8.2286	9.0012	3.19	3.94	26 5 46.6		
27.3	22 8 39.89	8 37.96	12 41 15.0	41 26.4	8.2398	9.0119	3.18	3.94	27 5 43.1		
28.3	22 9 5.22	9 3.25	12 38 45.2	38 56.8	8.2507	9.0220	3.18	3.93	28 5 39.6		
29.3	22 9 31.17	9 29.17	12 36 11.9	36 23.7	8.2610	9.0319	3.17	3.93	29 5 36.1		
30.3	22 9 57.74	9 55.70	12 33 35.1	33 47.1	8.2709	9.0417	3.16	3.92	30 5 32.6		
Dec. 1.3	22 10 24.91	10 22.83	12 30 54.8	31 7.1	8.2805	9.0511	3.16	3.92	1 5 29.1		
2.3	22 10 52.68	10 50.56	12 28 11.1	28 23.6	8.2879	9.0602	3.15	3.92	2 5 25.6		
3.3	22 11 21.04	11 18.89	12 25 24.0	25 36.6	8.2989	9.0690	3.15	3.91	3 5 22.1		
4.3	22 11 49.99	11 47.89	12 22 33.4	22 46.3	8.3076	9.0773	3.14	3.91	4 5 18.7		
5.3	22 12 19.52	12 17.30	12 19 39.6	19 52.7	8.3161	9.0856	3.13	3.90	5 5 15.3		
6.3	22 12 49.62	12 47.36	12 16 42.5	16 55.8	8.3241	9.0937	3.13	3.90	6 5 11.9		
7.3	22 13 20.27	13 17.98	12 13 42.1	13 55.5	8.3320	9.1017	3.12	3.90	7 5 8.5		
8.3	22 13 51.47	13 49.14	12 10 38.4	10 52.0	8.3395	9.1093	3.12	3.89	8 5 5.1		
9.3	22 14 23.21	14 20.85	12 7 31.5	7 45.3	8.3467	9.1167	3.11	3.89	9 5 1.7		
10.3	22 14 55.48	14 53.09	12 4 21.5	4 35.5	8.3539	9.1237	3.10	3.88	10 4 58.3		
11.3	22 15 23.28	15 25.86	12 1 8.4	1 22.5	8.3609	9.1307	3.10	3.88	11 4 54.9		
12.3	22 16 1.60	15 59.16	11 57 52.2	58 6.5	8.3678	9.1377	3.09	3.88	12 4 51.5		
13.3	22 16 35.43	16 32.94	11 54 32.9	54 47.3	8.3741	9.1443	3.09	3.87	13 4 48.1		
14.3	22 17 9.76	17 7.27	11 51 10.4	51 25.0	8.3804	9.1510	3.08	3.87	14 4 44.7		
15.3	22 17 44.59	17 42.08	11 47 45.0	47 59.8	8.3867	9.1576	3.07	3.86	15 4 41.4		
16.3	22 18 19.91	18 17.38	11 44 16.6	44 31.5	8.3927	9.1636	3.07	3.86	16 4 38.1		
17.3	22 18 55.72	18 53.18	11 40 45.3	41 0.3	8.3985	9.1695	3.06	3.86	17 4 34.7		
18.3	22 19 32.00	19 29.44	11 37 11.0	37 26.1	8.4043	9.1754	3.06	3.85	18 4 31.3		
19.3	22 20 8.76	20 6.19	11 33 33.8	33 49.0	8.4097	9.1813	3.05	3.85	19 4 28.0		
20.3	22 20 45.98	20 43.40	11 29 53.7	30 9.0	8.4151	9.1870	3.04	3.84	20 4 24.7		
21.2	22 21 23.66	21 21.07	11 26 10.8	26 26.2	8.4203	9.1926	3.04	3.84	21 4 21.4		
22.2	22 22 1.80	21 50.20	11 22 25.0	22 40.5	8.4255	9.1980	3.03	3.83	22 4 18.1		
23.2	22 22 40.38	22 37.77	11 18 36.4	18 52.1	8.4304	9.2033	3.02	3.83	23 4 14.8		
24.2	22 23 19.49	23 16.77	11 14 45.2	15 0.9	8.4352	9.2084	3.01	3.82	24 4 11.5		
25.2	22 23 58.84	23 56.20	11 10 51.2	11 7.0	8.4398	9.2134	3.00	3.81	25 4 8.2		
26.2	22 24 38.70	24 36.06	11 6 54.5	7 10.3	8.4445	9.2184	2.99	3.81	26 4 5.0		
27.2	22 25 18.98	25 16.33	11 2 55.2	3 11.0	8.4490	9.2230	2.98	3.80	27 4 1.7		
28.2	22 25 59.67	25 57.01	10 58 53.2	59 9.1	8.4533	9.2277	2.97	3.80	28 3 58.4		
29.2	22 26 40.76	26 38.09	10 54 48.6	55 4.6	8.4574	9.2322	2.96	3.79	29 3 55.2		
30.2	22 27 22.23	27 19.55	10 50 41.5	51 57.6	8.4614	9.2366	2.95	3.78	30 3 52.0		
31.2	22 28 4.08	28 1.40	10 46 31.9	46 48.0	8.4652	9.2409	2.94	3.78	31 3 48.8		
32.2	22 28 46.31	28 43.62	-10 42 19.9	42 35.9	+8.4688	+9.2451	+2.93	+3.77	32 3 45.6		

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
Jan. d	h	m	s	m	s	'	"	"					d h m
0.2	15	16	46.17	17	0.24	-15	58' 3.6	58' 53.3	+8.1877	-8.737	-2.75	+3.49	0 20 34.0
1.2	15	17	8.23	17	22.16	15	59' 21.5	60 10.5	8.1829	8.730	2.76	3.49	1 20 30.5
2.2	15	17	30.05	17	43.83	16	0 38.1	1 26.4	8.1780	8.722	2.77	3.50	2 20 26.9
3.2	15	17	51.62	18	5.24	16	1 53.4	2 40.9	8.1729	8.715	2.78	3.50	3 20 23.3
4.2	15	18	12.93	18	26.39	16	3 7.4	3 54.1	8.1675	8.707	2.79	3.51	4 20 19.7
5.2	15	18	33.97	18	47.27	16	4 20.1	5 6.0	8.1620	8.699	2.80	3.51	5 20 16.1
6.2	15	18	54.75	19	7.89	16	5 31.5	6 16.5	8.1565	8.691	2.81	3.51	6 20 12.6
7.2	15	19	15.27	19	28.24	16	6 41.6	7 25.7	8.1509	8.683	2.82	3.52	7 20 9.0
8.2	15	19	35.52	19	48.31	16	7 50.3	8 33.5	8.1450	8.674	2.83	3.52	8 20 5.4
9.2	15	19	55.49	20	8.10	16	8 57.6	9 30.9	8.1389	8.665	2.84	3.52	9 20 1.8
10.2	15	20	15.17	20	27.60	16	10 3.5	10 45.0	8.1325	8.656	2.85	3.53	10 19 58.2
11.2	15	20	34.56	20	46.81	16	11 8.1	11 48.7	8.1260	8.647	2.85	3.53	11 19 54.6
12.2	15	20	53.66	21	5.73	16	12 11.3	12 51.1	8.1194	8.638	2.86	3.53	12 19 51.0
13.2	15	21	12.47	21	24.35	16	13 13.2	13 52.1	8.1125	8.628	2.86	3.53	13 19 47.3
14.2	15	21	30.98	21	42.66	16	14 13.7	14 51.7	8.1054	8.618	2.87	3.54	14 19 43.7
15.2	15	21	49.18	22	0.67	16	15 12.8	15 49.9	8.0980	8.608	2.88	3.54	15 19 40.1
16.2	15	22	7.07	22	18.37	16	16 10.5	16 46.7	8.0905	8.597	2.88	3.54	16 19 36.4
17.2	15	22	24.65	22	35.75	16	17 6.8	17 42.1	8.0827	8.586	2.89	3.54	17 19 32.8
18.2	15	22	41.91	22	52.82	16	18 1.6	18 36.0	8.0748	8.575	2.89	3.54	18 19 29.2
19.2	15	22	58.86	23	9.57	16	18 55.0	19 28.5	8.0667	8.564	2.90	3.55	19 19 25.5
20.2	15	23	15.49	23	25.99	16	19 47.0	20 19.6	8.0582	8.552	2.90	3.55	20 19 21.8
21.2	15	23	31.79	23	42.08	16	20 37.6	21 9.3	8.0494	8.539	2.91	3.55	21 19 18.2
22.2	15	23	47.76	23	57.83	16	21 26.7	21 57.5	8.0403	8.526	2.91	3.55	22 19 14.5
23.2	15	24	3.39	24	13.25	16	22 14.4	22 44.2	8.0310	8.513	2.92	3.55	23 19 10.8
24.2	15	24	18.69	24	28.33	16	23 0.6	23 28.5	8.0215	8.499	2.92	3.55	24 19 7.1
25.2	15	24	33.65	24	43.07	16	23 45.3	24 13.3	8.0116	8.485	2.93	3.55	25 19 3.4
26.2	15	24	48.27	24	57.47	16	24 28.6	24 55.7	8.0014	8.471	2.93	3.55	26 18 59.7
27.1	15	25	2.54	25	11.52	16	25 10.5	25 36.6	7.9905	8.456	2.94	3.55	27 18 56.0
28.1	15	25	16.45	25	25.21	16	25 50.9	26 16.0	7.9793	8.440	2.94	3.56	28 18 52.3
29.1	15	25	30.00	25	38.53	16	26 29.8	26 54.0	7.9678	8.424	2.94	3.56	29 18 48.6
30.1	15	25	43.19	25	51.49	16	27 7.3	27 30.5	7.9559	8.407	2.95	3.56	30 18 44.9
31.1	15	25	56.02	26	4.09	16	27 43.3	28 5.5	7.9437	8.388	2.95	3.56	31 18 41.2
Feb. 1.1	15	26	8.49	26	16.32	16	28 17.7	28 39.0	7.9310	8.369	2.95	3.56	1 18 37.5
2.1	15	26	20.59	26	28.17	16	28 50.6	29 11.0	7.9175	8.349	2.96	3.56	2 18 33.8
3.1	15	26	32.31	26	39.65	16	29 22.0	29 41.4	7.9035	8.328	2.96	3.56	3 18 30.0
4.1	15	26	43.65	26	50.75	16	29 51.9	30 10.3	7.8889	8.306	2.96	3.56	4 18 26.3
5.1	15	26	54.61	27	1.46	16	30 20.3	30 37.7	7.8737	8.283	2.96	3.56	5 18 22.5
6.1	15	27	5.18	27	11.78	16	30 47.2	31 3.6	7.8578	8.259	2.97	3.56	6 18 18.7
7.1	15	27	15.37	27	21.72	16	31 12.6	31 28.0	7.8414	8.233	2.97	3.56	7 18 15.0
8.1	15	27	25.17	27	31.27	16	31 36.5	31 50.9	7.8241	8.206	2.97	3.56	8 18 11.2
9.1	15	27	34.58	27	40.43	16	31 58.9	32 12.3	7.8061	8.176	2.97	3.56	9 18 7.4
10.1	15	27	43.60	27	49.19	16	32 19.7	32 32.2	7.7871	8.144	2.98	3.56	10 18 3.6
11.1	15	27	52.22	27	57.56	16	32 39.0	32 50.6	7.7672	8.110	2.98	3.56	11 17 59.8
12.1	15	28	0.45	28	5.53	16	32 56.8	33 7.5	7.7464	8.073	2.98	3.56	12 17 56.0
13.1	15	28	8.28	28	13.11	16	33 13.1	33 22.9	7.7242	8.033	2.98	3.56	13 17 52.2
14.1	15	28	15.71	28	20.29	16	33 27.9	33 36.7	7.7008	7.989	2.99	3.56	14 17 48.4
15.1	15	28	22.74	28	27.06	16	33 41.2	33 49.0	7.6761	7.940	2.99	3.56	15 17 44.6
16.1	15	28	29.37	28	33.42	16	33 53.0	33 59.8	7.6495	7.885	2.99	3.56	16 17 40.8
17.1	15	28	35.59	28	39.38	16	34 3.3	34 9.1	7.6212	7.822	2.99	3.55	17 17 37.0
18.1	15	28	41.41	28	44.93	16	34 12.1	34 16.9	7.5910	7.747	2.99	3.55	18 17 33.1
19.1	15	28	46.82	28	50.08	16	34 19.4	34 23.2	7.5581	7.658	3.00	3.55	19 17 29.3
20.1	15	28	51.82	28	54.83	16	34 25.2	34 28.0	7.5229	7.545	3.00	3.55	20 17 25.4
21.1	15	28	56.42	28	59.17	16	34 29.5	34 31.4	7.4846	7.392	3.00	3.55	21 17 21.6
22.1	15	29	0.61	29	3.09	16	34 32.3	34 33.3	7.4421	7.153	3.00	3.55	22 17 17.7
23.1	15	29	4.39	29	6.60	16	34 33.6	34 33.7	7.3949	-6.582	3.00	3.55	23 17 13.8
24.1	15	29	7.76	29	9.70	16	34 33.4	34 32.6	7.3413	+6.796	3.00	3.55	24 17 9.9
25.1	15	29	10.71	29	12.39	16	34 31.8	34 30.0	7.2802	7.213	3.01	3.54	25 17 6.1
26.1	15	29	13.25	29	14.66	16	34 28.7	34 25.9	7.2090	7.427	3.01	3.54	26 17 2.2
27.1	15	29	15.37	29	16.52	16	34 24.1	34 20.4	7.1238	7.570	3.01	3.54	27 16 58.3
28.1	15	29	17.08	29	17.96	16	34 18.0	34 13.4	7.0177	7.674	3.01	3.54	28 16 54.4
29.1	15	29	18.37	29	18.98	16	34 10.5	34 4.9	6.8751	7.758	3.01	3.54	29 16 50.4
30.1	15	29	19.24	29	19.58	-16	34 1.5	33 55.0	+6.6612	+7.828	-3.01	+3.54	30 16 46.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In E.A.	In Dec.	In E.A.	In Dec.	
May	d h m s	m s	° ' "	° ' "					d h m
1.9	15 18 59.66	18 48.40	-15 47 38.7	46 55.1	-8.0875	+8.676	-2.34		2 12 36.2
2.9	15 18 42.00	18 30.69	15 46 30.4	45 46.7	8.0896	8.676	2.29		3 12 31.9
3.9	15 18 24.26	18 12.91	15 45 22.0	44 38.2	8.0914	8.677	2.23		4 12 27.7
4.9	15 18 6.45	17 55.06	15 44 13.5	43 29.7	8.0930	8.678	2.16		5 12 23.5
5.9	15 17 48.58	17 37.16	15 43 4.9	42 21.1	8.0944	8.678	2.08		6 12 19.3
6.9	15 17 30.66	17 19.21	15 41 56.3	41 12.5	8.0956	8.678	1.99		7 12 15.0
7.9	15 17 12.69	17 1.22	15 40 47.7	40 4.0	8.0965	8.678	1.86		8 12 10.8
8.9	15 16 54.69	16 43.20	15 39 39.2	38 55.6	8.0973	8.677	-1.68		9 12 6.6
9.9	15 16 36.66	16 25.17	15 38 30.8	37 47.3	8.0978	8.676			10 12 2.3
10.9	15 16 18.62	16 7.14	15 37 22.5	36 39.2	8.0979	8.675	-2.68		11 11 58.1
11.9	15 16 0.58	15 49.11	15 36 14.4	35 31.3	8.0978	8.674		2.75	12 11 53.9
12.9	15 15 42.55	15 31.09	15 35 6.6	34 23.6	8.0975	8.672	+1.68	2.81	13 11 49.6
13.9	15 15 24.53	15 13.09	15 33 59.0	33 16.1	8.0970	8.671	1.86	2.86	14 11 45.4
14.9	15 15 6.54	14 55.12	15 32 51.6	32 8.9	8.0963	8.669	1.99	2.91	15 11 41.2
15.9	15 14 48.58	14 37.19	15 31 44.5	31 2.1	8.0955	8.667	2.08	2.95	16 11 36.9
16.8	15 14 30.66	14 19.31	15 30 37.8	29 55.7	8.0944	8.664	2.16	2.99	17 11 32.7
17.8	15 14 12.79	14 1.48	15 29 31.5	28 49.7	8.0932	8.662	2.23	3.02	18 11 28.5
18.8	15 13 54.97	13 43.71	15 28 25.6	27 44.1	8.0917	8.659	2.29	3.05	19 11 24.3
19.8	15 13 37.22	13 26.01	15 27 20.1	26 39.0	8.0900	8.656	2.34	3.08	20 11 20.0
20.8	15 13 19.54	13 8.38	15 26 15.1	25 34.4	8.0881	8.653	2.38	3.11	21 11 15.8
21.8	15 13 1.94	12 50.84	15 25 10.7	24 30.3	8.0859	8.649	2.41	3.14	22 11 11.6
22.8	15 12 44.44	12 33.40	15 24 6.8	23 26.8	8.0834	8.645	2.43	3.16	23 11 7.4
23.8	15 12 27.04	12 16.06	15 23 3.5	22 23.9	8.0809	8.641	2.45	3.19	24 11 3.1
24.8	15 12 9.74	11 58.84	15 22 0.8	21 21.6	8.0782	8.636	2.47	3.21	25 10 58.9
25.8	15 11 52.56	11 41.75	15 20 58.8	20 19.9	8.0750	8.632	2.49	3.23	26 10 54.7
26.8	15 11 35.51	11 24.79	15 19 57.4	19 18.9	8.0716	8.627	2.51	3.25	27 10 50.5
27.8	15 11 18.61	11 7.97	15 18 56.7	18 18.7	8.0680	8.622	2.53	3.27	28 10 46.3
28.8	15 11 1.83	10 51.30	15 17 56.8	17 19.3	8.0642	8.616	2.55	3.29	29 10 42.1
29.8	15 10 45.21	10 34.79	15 16 57.7	16 20.7	8.0602	8.610	2.57	3.31	30 10 37.9
30.8	15 10 28.75	10 18.44	15 15 59.4	15 23.0	8.0558	8.604	2.59	3.33	31 10 33.7
31.8	15 10 12.46	10 2.26	15 15 2.0	14 26.2	8.0512	8.597	2.61	3.34	32 10 29.5
June 1.8	15 9 56.35	9 46.26	15 14 5.5	13 30.3	8.0463	8.590	2.63	3.36	2 10 25.3
2.8	15 9 40.42	9 30.45	15 13 9.9	12 35.3	8.0413	8.583	2.65	3.37	3 10 21.1
3.8	15 9 24.68	9 14.84	15 12 15.2	11 41.2	8.0359	8.576	2.67	3.38	4 10 16.9
4.8	15 9 9.14	8 59.44	15 11 21.5	10 48.2	8.0301	8.567	2.69	3.40	5 10 12.7
5.8	15 8 53.81	8 44.25	15 10 28.9	9 56.2	8.0241	8.558	2.71	3.41	6 10 8.5
6.8	15 8 38.70	8 29.28	15 9 37.3	9 5.2	8.0177	8.550	2.73	3.42	7 10 4.3
7.8	15 8 23.81	8 14.54	15 8 46.7	8 15.3	8.0110	8.541	2.75	3.43	8 10 0.2
8.8	15 8 9.16	8 0.04	15 7 57.2	7 26.6	8.0039	8.531	2.76	3.44	9 9 56.0
9.8	15 7 54.75	7 45.79	15 7 8.9	6 39.0	7.9967	8.521	2.77	3.45	10 9 51.8
10.8	15 7 40.58	7 31.78	15 6 21.7	5 52.6	7.9892	8.510	2.78	3.46	11 9 47.7
11.8	15 7 26.66	7 18.02	15 5 35.7	5 7.4	7.9814	8.499	2.80	3.47	12 9 43.5
12.8	15 7 12.99	7 4.51	15 4 50.9	4 23.4	7.9733	8.487	2.81	3.48	13 9 39.4
13.8	15 6 59.58	6 51.27	15 4 7.3	3 40.6	7.9647	8.475	2.82	3.49	14 9 35.2
14.8	15 6 46.44	6 38.30	15 3 25.0	2 59.1	7.9558	8.461	2.83	3.50	15 9 31.0
15.8	15 6 33.57	6 25.61	15 2 44.0	2 18.9	7.9465	8.447	2.84	3.51	16 9 26.9
16.8	15 6 20.98	6 13.21	15 2 4.3	1 40.0	7.9366	8.433	2.85	3.52	17 9 22.7
17.8	15 6 8.68	6 1.09	15 1 25.9	1 2.5	7.9264	8.418	2.86	3.53	18 9 18.6
18.8	15 5 56.67	5 49.26	15 0 48.9	0 26.4	7.9159	8.402	2.86	3.53	19 9 14.5
19.8	15 5 44.95	5 37.72	14 60 13.3	59 51.6	7.9052	8.385	2.87	3.54	20 9 10.4
20.8	15 5 33.52	5 26.48	14 59 39.0	59 18.1	7.8939	8.369	2.87	3.55	21 9 6.3
21.7	15 5 22.39	5 15.55	14 59 6.0	58 46.0	7.8820	8.351	2.88	3.56	22 9 2.2
22.7	15 5 11.57	5 4.93	14 58 34.4	58 15.4	7.8694	8.331	2.88	3.56	23 8 58.0
23.7	15 5 1.07	4 54.63	14 58 4.3	57 46.3	7.8562	8.309	2.89	3.57	24 8 53.9
24.7	15 4 50.89	4 44.65	14 57 35.7	57 18.6	7.8425	8.286	2.89	3.57	25 8 49.8
25.7	15 4 41.03	4 35.00	14 57 8.6	56 52.3	7.8282	8.263	2.90	3.58	26 8 45.7
26.7	15 4 31.50	4 25.63	14 56 42.9	56 27.5	7.8131	8.239	2.91	3.58	27 8 41.6
27.7	15 4 22.30	4 16.69	14 56 18.7	56 4.3	7.7976	8.212	2.91	3.58	28 8 37.6
28.7	15 4 13.43	4 8.03	14 55 56.0	55 42.6	7.7812	8.182	2.92	3.58	29 8 33.5
29.7	15 4 4.90	3 59.72	14 55 34.9	55 22.4	7.7636	8.150	2.92	3.58	30 8 29.4
30.7	15 3 56.72	3 51.77	14 55 15.3	55 3.8	7.7447	8.116	2.93	3.59	31 8 25.3
31.7	15 3 48.90	3 44.17	-14 54 57.3	54 46.7	-7.7250	+8.078	+2.93	-3.59	32 8 21.3

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July 1.7	15 3 48.90	3 44.17	-14 54 57.3	54 46.7	-7.7250	+8.078	+2.93	-3.59	2 8 21.3
2.7	15 3 41.43	3 36.92	14 54 40.8	54 31.2	7.7047	8.038	2.94	3.59	3 8 17.3
3.7	15 3 34.31	3 30.03	14 54 25.9	54 17.3	7.6830	7.991	2.94	3.59	4 8 13.2
4.7	15 3 27.55	3 23.50	14 54 12.6	54 5.0	7.6599	7.939	2.94	3.59	5 8 9.2
5.7	15 3 21.15	3 17.32	14 54 0.9	53 54.3	7.6354	7.879	2.94	3.59	6 8 5.1
6.7	15 3 15.11	3 11.50	14 53 50.8	53 45.2	7.6095	7.810	2.95	3.60	7 8 1.1
7.7	15 3 9.43	3 6.05	14 53 42.3	53 37.8	7.5816	7.725	2.95	3.60	8 7 57.1
8.7	15 3 4.12	3 0.98	14 53 35.5	53 32.0	7.5509	7.620	2.95	3.60	9 7 53.1
9.7	15 2 59.19	2 56.29	14 53 30.3	53 27.9	7.5179	7.480	2.95	3.60	10 7 49.0
10.7	15 2 54.63	2 51.97	14 53 26.8	53 26.4	7.4821	7.273	2.95	3.60	11 7 45.0
11.7	15 2 50.45	2 48.02	14 53 24.9	53 24.5	7.4432	+6.883	2.95	3.60	12 7 41.0
12.7	15 2 46.64	2 44.44	14 53 24.6	53 25.2	7.4009	-6.541	2.96	3.60	13 7 37.0
13.7	15 2 43.20	2 41.24	14 53 25.9	53 27.6	7.3535	7.174	2.96	3.61	14 7 33.1
14.7	15 2 40.14	2 38.42	14 53 28.9	53 31.6	7.3015	7.427	2.96	3.61	15 7 29.1
15.7	15 2 37.46	2 35.98	14 53 33.6	53 37.3	7.2378	7.562	2.96	3.61	16 7 25.1
16.7	15 2 35.16	2 33.91	14 53 39.9	53 44.7	7.1669	7.606	2.96	3.61	17 7 21.2
17.7	15 2 33.23	2 32.22	14 53 47.9	53 53.7	7.0822	7.786	2.96	3.61	18 7 17.2
18.7	15 2 31.68	2 30.91	14 53 57.5	54 4.3	6.9736	7.859	2.96	3.61	19 7 13.2
19.7	15 2 30.52	2 29.99	14 54 8.7	54 16.6	6.8224	7.923	2.96	3.61	20 7 9.3
20.7	15 2 29.74	2 29.45	14 54 21.6	54 30.5	6.6125	7.978	2.96	3.61	21 7 5.3
21.7	15 2 29.34	2 29.29	14 54 36.1	54 46.1	-6.1639	8.028	2.97	3.60	22 7 1.4
22.7	15 2 29.32	2 29.52	14 54 52.3	55 3.3	+6.0847	8.073	2.97	3.60	23 6 57.5
23.7	15 2 29.69	2 30.13	14 55 10.2	55 22.2	6.5937	8.113	2.97	3.60	24 6 53.6
24.7	15 2 30.45	2 31.13	14 55 29.7	55 42.7	6.8104	8.149	2.97	3.60	25 6 49.6
25.7	15 2 31.59	2 32.51	14 55 50.8	56 4.8	6.9671	8.182	2.97	3.60	26 6 45.7
26.7	15 2 33.12	2 34.28	14 56 13.5	56 28.5	7.0772	8.213	2.97	3.60	27 6 41.9
27.7	15 2 35.03	2 36.44	14 56 37.8	56 53.8	7.1649	8.241	2.97	3.59	28 6 38.0
28.6	15 2 37.33	2 38.98	14 57 3.7	57 20.7	7.2387	8.268	2.97	3.59	29 6 34.1
29.6	15 2 40.02	2 41.91	14 57 31.2	57 40.3	7.3018	8.294	2.97	3.59	30 6 30.2
30.6	15 2 43.10	2 45.22	14 58 0.4	58 19.5	7.3562	8.319	2.97	3.59	31 6 26.3
31.6	15 2 46.56	2 48.91	14 58 31.2	58 51.3	7.4039	8.341	2.97	3.58	32 6 22.4
Aug. 1.6	15 2 50.40	2 52.99	14 59 3.6	59 24.7	7.4469	8.363	2.96	3.58	2 6 18.6
2.6	15 2 54.62	2 57.46	14 59 37.6	59 50.6	7.4866	8.383	2.96	3.58	3 6 14.7
3.6	15 2 59.23	3 2.32	15 0 13.1	0 36.1	7.5233	8.402	2.96	3.57	4 6 10.8
4.6	15 3 4.23	3 7.56	15 0 50.2	1 14.2	7.5568	8.420	2.96	3.57	5 6 7.0
5.6	15 3 9.61	3 13.18	15 1 23.8	1 53.8	7.5875	8.437	2.96	3.56	6 6 3.2
6.6	15 3 15.37	3 19.18	15 2 9.0	2 34.9	7.6162	8.454	2.96	3.56	7 5 59.3
7.6	15 3 21.51	3 25.56	15 2 50.7	3 17.6	7.6430	8.470	2.96	3.56	8 5 55.5
8.6	15 3 28.03	3 32.32	15 3 33.9	4 1.8	7.6684	8.485	2.96	3.55	9 5 51.7
9.6	15 3 34.93	3 39.45	15 4 18.7	4 47.5	7.6920	8.500	2.95	3.55	10 5 47.9
10.6	15 3 42.29	3 46.95	15 5 5.0	5 34.6	7.7141	8.514	2.95	3.55	11 5 44.1
11.6	15 3 49.84	3 54.82	15 5 52.7	6 23.2	7.7348	8.527	2.95	3.54	12 5 40.3
12.6	15 3 57.84	4 3.06	15 6 41.8	7 13.3	7.7547	8.539	2.95	3.54	13 5 36.5
13.6	15 4 6.21	4 11.66	15 7 32.4	8 4.9	7.7739	8.552	2.95	3.53	14 5 32.7
14.6	15 4 14.95	4 20.62	15 8 24.5	8 57.9	7.7920	8.564	2.94	3.53	15 5 28.9
15.6	15 4 24.05	4 29.94	15 9 18.0	9 52.3	7.8092	8.576	2.94	3.52	16 5 25.1
16.6	15 4 33.51	4 39.62	15 10 12.9	10 48.1	7.8255	8.587	2.94	3.52	17 5 21.4
17.6	15 4 43.32	4 49.66	15 11 9.2	11 45.3	7.8412	8.598	2.94	3.51	18 5 17.6
18.6	15 4 53.49	5 0.06	15 12 6.9	12 43.8	7.8566	8.608	2.94	3.51	19 5 13.8
19.6	15 5 4.02	5 10.81	15 13 5.9	13 43.7	7.8712	8.618	2.93	3.50	20 5 10.1
20.6	15 5 14.90	5 21.92	15 14 6.3	14 44.9	7.8854	8.627	2.93	3.50	21 5 6.3
21.6	15 5 26.14	5 33.39	15 15 8.0	15 47.4	7.8993	8.636	2.93	3.49	22 5 2.6
22.6	15 5 37.74	5 45.21	15 16 11.0	16 51.2	7.9126	8.645	2.92	3.49	23 4 58.9
23.6	15 5 49.69	5 57.37	15 17 15.3	17 56.4	7.9251	8.654	2.92	3.48	24 4 55.1
24.6	15 6 1.98	6 0.87	15 18 20.9	19 2.9	7.9372	8.663	2.91	3.48	25 4 51.4
25.6	15 6 14.61	6 22.72	15 19 27.8	20 10.6	7.9488	8.671	2.91	3.47	26 4 47.7
26.6	15 6 27.58	6 35.91	15 20 36.0	21 19.5	7.9602	8.679	2.91	3.46	27 4 44.0
27.6	15 6 40.89	6 49.44	15 21 45.4	22 29.6	7.9713	8.686	2.90	3.46	28 4 40.3
28.6	15 6 54.54	7 3.31	15 22 55.9	23 40.9	7.9821	8.694	2.90	3.45	29 4 36.6
29.6	15 7 8.53	7 17.51	15 24 7.6	24 53.4	7.9925	8.701	2.89	3.44	30 4 32.9
30.6	15 7 22.85	7 32.04	15 25 20.5	26 7.1	8.0026	8.708	2.89	3.43	31 4 29.2
31.6	15 7 37.50	7 46.89	-15 26 34.6	27 22.0	+8.0122	-8.715	+2.89	-3.42	32 4 25.5

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	15 7 52.47	8 2.06	-15 27 49.9	28 36.0	+8.0215	-8.722	+2.88	-3.42	2 4 21.8
2.6	15 8 7.76	8 17.56	15 29 6.3	29 55.1	8.0306	8.728	2.88	3.41	3 4 18.1
3.5	15 8 23.37	8 33.38	15 30 23.8	31 13.3	8.0395	8.734	2.87	3.40	4 4 14.5
4.5	15 8 39.30	8 49.51	15 31 42.4	32 32.5	8.0481	8.740	2.87	3.39	5 4 10.8
5.5	15 8 55.54	9 5.96	15 33 2.0	33 52.8	8.0564	8.745	2.87	3.38	6 4 7.1
6.5	15 9 12.09	9 22.69	15 34 22.7	35 14.2	8.0644	8.751	2.86	3.38	7 4 3.5
7.5	15 9 28.94	9 39.74	15 35 44.4	36 36.6	8.0722	8.757	2.86	3.37	8 3 59.8
8.5	15 9 46.10	9 57.09	15 37 7.1	37 59.9	8.0799	8.762	2.85	3.36	9 3 56.2
9.5	15 10 3.56	10 14.74	15 38 30.8	39 24.1	8.0874	8.767	2.85	3.35	10 3 52.5
10.5	15 10 21.32	10 32.69	15 39 55.4	40 49.3	8.0946	8.771	2.85	3.34	11 3 48.9
11.5	15 10 39.37	10 50.93	15 41 20.9	42 15.4	8.1015	8.776	2.84	3.33	12 3 45.3
12.5	15 10 57.70	11 9.45	15 42 47.3	43 42.4	8.1082	8.780	2.84	3.32	13 3 41.7
13.5	15 11 16.32	11 28.95	15 44 14.6	45 10.3	8.1149	8.785	2.83	3.31	14 3 38.1
14.5	15 11 35.22	11 47.33	15 45 42.8	46 39.1	8.1213	8.789	2.83	3.29	15 3 34.4
15.5	15 11 54.40	12 6.69	15 47 11.9	48 8.8	8.1276	8.794	2.83	3.28	16 3 30.8
16.5	15 12 13.86	12 26.32	15 48 41.9	49 39.3	8.1338	8.798	2.82	3.27	17 3 27.2
17.5	15 12 33.59	12 46.23	15 50 12.7	51 10.5	8.1397	8.801	2.82	3.26	18 3 23.6
18.5	15 12 53.59	13 6.41	15 51 44.2	52 42.5	8.1456	8.805	2.81	3.25	19 3 20.0
19.5	15 13 13.86	13 26.85	15 53 16.4	54 15.2	8.1513	8.808	2.81	3.23	20 3 16.4
20.5	15 13 34.39	13 47.55	15 54 49.3	55 48.6	8.1568	8.812	2.80	3.22	21 3 12.9
21.5	15 13 55.18	14 8.51	15 56 23.0	57 22.8	8.1622	8.815	2.80	3.21	22 3 9.3
22.5	15 14 16.23	14 29.73	15 57 57.5	58 57.8	8.1676	8.819	2.79	3.19	23 3 5.7
23.5	15 14 37.54	14 51.21	15 59 32.7	60 33.5	8.1728	8.822	2.78	3.18	24 3 2.1
24.5	15 14 59.10	15 12.94	16 1 8.6	2 9.8	8.1778	8.825	2.78	3.16	25 2 58.5
25.5	15 15 20.91	15 34.91	16 2 45.1	3 46.8	8.1827	8.828	2.77	3.15	26 2 55.0
26.5	15 15 42.96	15 57.12	16 4 22.3	5 24.4	8.1874	8.831	2.76	3.13	27 2 51.4
27.5	15 16 5.25	16 19.66	16 6 0.1	7 2.5	8.1920	8.833	2.75	3.11	28 2 47.9
28.5	15 16 27.77	16 42.23	16 7 38.4	8 41.2	8.1964	8.836	2.74	3.10	29 2 44.3
29.5	15 16 50.52	17 5.13	16 9 17.3	10 20.4	8.2008	8.838	2.74	3.08	30 2 40.7
30.5	15 17 13.50	17 28.26	16 10 56.7	12 0.1	8.2052	8.840	2.73	3.06	31 2 37.2
Oct. 1.5	15 17 36.71	17 51.61	16 12 36.6	13 40.4	8.2094	8.842	2.72	3.05	2 2 33.6
2.5	15 18 0.14	18 15.18	16 14 17.0	15 21.2	8.2134	8.844	2.71	3.03	3 2 30.1
3.5	15 18 23.78	18 38.96	16 15 57.9	17 2.5	8.2172	8.847	2.70	3.01	4 2 26.5
4.5	15 18 47.63	19 2.95	16 17 39.3	18 44.2	8.2210	8.849	2.70	2.99	5 2 23.0
5.5	15 19 11.89	19 27.15	16 19 21.1	20 26.3	8.2247	8.850	2.69	2.97	6 2 19.5
6.5	15 19 35.95	19 51.55	16 21 3.3	22 8.8	8.2283	8.852	2.68	2.95	7 2 16.0
7.5	15 20 0.41	20 16.14	16 22 45.9	23 51.6	8.2318	8.853	2.67	2.93	8 2 12.4
8.5	15 20 25.06	20 40.92	16 24 28.8	25 34.7	8.2351	8.855	2.66	2.91	9 2 8.9
9.4	15 20 49.90	21 5.88	16 26 12.0	27 18.2	8.2384	8.856	2.65	2.89	10 2 5.4
10.4	15 21 14.93	21 31.93	16 27 55.6	29 2.0	8.2417	8.858	2.64	2.87	11 2 1.9
11.4	15 21 40.14	21 56.37	16 29 39.5	30 46.1	8.2448	8.859	2.63	2.85	12 1 58.4
12.4	15 22 5.53	22 21.89	16 31 23.7	32 30.4	8.2478	8.860	2.62	2.83	13 1 54.9
13.4	15 22 31.10	22 47.58	16 33 8.1	34 15.0	8.2508	8.861	2.61	2.81	14 1 51.4
14.4	15 22 56.84	23 13.44	16 34 52.7	35 59.8	8.2537	8.862	2.60	2.79	15 1 47.9
15.4	15 23 22.75	23 39.46	16 36 37.5	37 44.8	8.2564	8.862	2.59	2.77	16 1 44.4
16.4	15 23 48.82	24 5.64	16 38 22.5	39 30.0	8.2591	8.863	2.58	2.74	17 1 40.9
17.4	15 24 15.05	24 31.98	16 40 7.7	41 15.4	8.2618	8.864	2.57	2.71	18 1 37.4
18.4	15 24 41.44	24 58.47	16 41 53.1	43 0.9	8.2643	8.865	2.56	-2.68	19 1 33.9
19.4	15 25 7.98	25 25.11	16 43 38.7	44 46.6	8.2667	8.866	2.55	2.68	20 1 30.4
20.4	15 25 34.66	25 51.90	16 45 24.4	46 32.4	8.2691	8.866	2.54	2.67	21 1 26.9
21.4	15 26 1.49	26 18.84	16 47 10.2	48 18.2	8.2715	8.866	2.53	2.66	22 1 23.4
22.4	15 26 28.47	26 45.92	16 48 56.0	50 4.1	8.2738	8.866	2.52	2.65	23 1 20.0
23.4	15 26 55.59	27 13.13	16 50 41.9	51 50.0	8.2760	8.867	2.50	2.64	24 1 16.5
24.4	15 27 22.84	27 40.47	16 52 27.8	53 36.0	8.2780	8.867	2.49	2.63	25 1 13.0
25.4	15 27 50.22	28 7.94	16 54 13.8	55 22.0	8.2800	8.867	2.48	2.62	26 1 9.5
26.4	15 28 17.72	28 35.52	16 55 59.8	57 8.0	8.2818	8.867	2.47	2.61	27 1 6.0
27.4	15 28 45.33	29 3.91	16 57 45.7	58 54.0	8.2836	8.867	2.45	2.60	28 1 2.6
28.4	15 29 13.05	29 31.00	16 59 31.6	60 40.0	8.2853	8.867	2.43	2.59	29 0 59.1
29.4	15 29 40.88	29 58.90	17 1 17.5	2 25.9	8.2869	8.866	2.42	2.58	30 0 55.6
30.4	15 30 8.81	30 26.91	17 3 3.3	4 11.6	8.2885	8.866	2.40	2.57	31 0 52.2
31.4	15 30 36.84	30 55.02	17 4 48.9	5 57.2	8.2900	8.865	2.38	2.56	32 0 48.7
32.4	15 31 4.97	31 23.22	-17 6 34.4	7 42.6	+8.2915	-8.865	+2.36	2.55	33 0 45.2

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.				Apparent Declination.				Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.		At Transit.		At Sidereal Oh.		At Transit.		In R.A.	In Dec.	In R.A.	In Dec.	
d	h	m	s	m	s	s	s	s					d h m
Jan. 0.2	6	26	59.61	26	56.59	+23	37	51.5	-7.8928	+7.730			0 11 45.5
1.2	6	26	43.37	26	45.35	23	37	59.2	7.8922	7.726			1 11 41.4
2.2	6	26	37.14	26	34.13	23	38	6.8	7.8911	7.722			2 11 37.3
3.2	6	26	25.95	26	22.95	23	38	14.4	7.8897	7.716			3 11 33.2
4.2	6	26	14.83	26	11.81	23	38	21.8	7.8881	7.710			4 11 29.0
5.2	6	26	3.69	26	0.72	23	38	29.2	7.8864	7.704			5 11 24.9
6.2	6	25	52.63	25	49.67	23	38	36.4	7.8845	7.698			6 11 20.8
7.2	6	25	41.62	25	38.63	23	38	43.6	7.8826	7.692	+2.08		7 11 16.7
8.2	6	25	30.65	25	27.73	23	38	50.7	7.8805	7.686	2.13		8 11 12.5
9.2	6	25	19.75	25	16.84	23	38	57.6	7.8781	7.679	2.17		9 11 8.4
10.2	6	25	8.90	25	6.01	23	39	4.5	7.8755	7.672	2.21		10 11 4.3
11.2	6	24	58.12	24	55.26	23	39	11.2	7.8726	7.665	2.24		11 11 0.2
12.2	6	24	47.42	24	44.57	23	39	17.9	7.8696	7.658	2.27		12 10 56.1
13.2	6	24	36.79	24	33.97	23	39	24.4	7.8662	7.651	2.30		13 10 52.0
14.2	6	24	26.25	24	23.46	23	39	30.8	7.8626	7.643	2.33		14 10 47.8
15.2	6	24	15.81	24	13.03	23	39	37.1	7.8588	7.635	2.35		15 10 43.7
16.2	6	24	5.45	24	2.70	23	39	43.3	7.8549	7.627	2.37		16 10 39.6
17.2	6	23	55.19	23	52.47	23	39	49.3	7.8507	7.619	2.39		17 10 35.5
18.2	6	23	45.02	23	42.34	23	39	55.2	7.8465	7.611	2.41		18 10 31.4
19.2	6	23	34.97	23	32.31	23	40	1.0	7.8419	7.602	2.43		19 10 27.3
20.2	6	23	25.02	23	22.39	23	40	6.7	7.8370	7.593	2.44		20 10 23.2
21.2	6	23	15.18	23	12.53	23	40	12.3	7.8318	7.583	2.45		21 10 19.1
22.2	6	23	5.46	23	2.90	23	40	17.7	7.8264	7.573	2.47		22 10 15.0
23.2	6	22	55.86	22	53.33	23	40	23.0	7.8209	7.563	2.48		23 10 11.0
24.2	6	22	46.31	22	43.90	23	40	28.2	7.8151	7.553	2.49		24 10 6.9
25.2	6	22	37.05	22	34.67	23	40	33.2	7.8088	7.542	2.50		25 10 2.8
26.2	6	22	27.85	22	25.43	23	40	38.2	7.8023	7.531	2.51		26 9 58.7
27.1	6	22	18.79	22	16.40	23	40	43.0	7.7957	7.520	2.52		27 9 54.6
28.1	6	22	9.86	22	7.52	23	40	47.7	7.7890	7.508	2.53		28 9 50.5
29.1	6	22	1.08	21	58.78	23	40	52.3	7.7816	7.496	2.55		29 9 46.5
30.1	6	21	52.45	21	50.19	23	40	56.8	7.7738	7.484	2.56		30 9 42.4
31.1	6	21	43.98	21	41.76	23	41	1.1	7.7657	7.472	2.57		31 9 38.3
Feb. 1.1	6	21	35.66	21	33.48	23	41	5.3	7.7572	7.459	2.58		1 9 34.2
2.1	6	21	27.51	21	25.38	23	41	9.4	7.7484	7.446	2.59		2 9 30.2
3.1	6	21	19.53	21	17.44	23	41	13.4	7.7392	7.432	2.60		3 9 26.1
4.1	6	21	11.72	21	9.67	23	41	17.2	7.7296	7.418	2.61		4 9 22.0
5.1	6	21	4.08	21	2.08	23	41	20.9	7.7197	7.403	2.62		5 9 18.0
6.1	6	20	56.61	20	54.66	23	41	24.5	7.7093	7.388	2.63		6 9 13.9
7.1	6	20	49.33	20	47.43	23	41	28.0	7.6985	7.373	2.63		7 9 9.9
8.1	6	20	42.23	20	40.38	23	41	31.4	7.6873	7.357	2.64		8 9 5.8
9.1	6	20	35.31	20	33.51	23	41	34.6	7.6757	7.340	2.65		9 9 1.8
10.1	6	20	28.58	20	26.83	23	41	37.7	7.6635	7.323	2.66		10 8 57.7
11.1	6	20	22.04	20	20.34	23	41	40.7	7.6508	7.306	2.67		11 8 53.7
12.1	6	20	15.69	20	14.05	23	41	43.5	7.6372	7.288	2.68		12 8 49.7
13.1	6	20	9.54	20	7.95	23	41	46.2	7.6230	7.268	2.69		13 8 45.6
14.1	6	20	3.69	20	2.06	23	41	48.8	7.6082	7.247	2.70		14 8 41.6
15.1	6	19	57.85	19	56.37	23	41	51.3	7.5930	7.225	2.71		15 8 37.6
16.1	6	19	52.31	19	50.88	23	41	53.6	7.5772	7.202	2.71		16 8 33.6
17.1	6	19	46.97	19	45.60	23	41	55.8	7.5605	7.178	2.72		17 8 29.5
18.1	6	19	41.84	19	40.53	23	41	57.9	7.5428	7.153	2.72		18 8 25.5
19.1	6	19	36.92	19	35.66	23	41	59.9	7.5242	7.127	2.72		19 8 21.5
20.1	6	19	32.22	19	31.01	23	42	1.8	7.5045	7.099	2.72		20 8 17.5
21.1	6	19	27.72	19	26.57	23	42	3.5	7.4838	7.069	2.73		21 8 13.5
22.1	6	19	23.44	19	22.35	23	42	5.2	7.4618	7.037	2.73		22 8 9.5
23.1	6	19	19.38	19	18.35	23	42	6.7	7.4384	7.004	2.73		23 8 5.5
24.1	6	19	15.54	19	14.57	23	42	8.1	7.4136	6.968	2.73		24 8 1.5
25.1	6	19	11.92	19	11.00	23	42	9.4	7.3873	6.929	2.73		25 7 57.5
26.1	6	19	8.51	19	7.66	23	42	10.5	7.3590	6.887	2.73		26 7 53.5
27.1	6	19	5.33	19	4.54	23	42	11.6	7.3285	6.841	2.73		27 7 49.6
28.1	6	19	2.38	19	1.64	23	42	12.5	7.2953	6.791	2.73		28 7 45.6
29.1	6	18	59.65	18	58.97	23	42	13.4	7.2594	6.733	2.73		29 7 41.6
30.1	6	18	57.15	18	56.53	+23	42	14.1	-7.2201	+6.663	+2.74		30 7 37.6

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Mar. ^d	^h ^m ^s	^m ^s	⁺ ^o ['] ["]	['] ["]					^d ^h ^m
1.1	6 18 59.65	18 58.97	+23 42 13.4	42 13.5	-7.2594	+6.733	+2.73		1 7 41.6
2.1	6 18 57.15	18 56.53	23 42 14.1	42 14.2	7.2201	6.663	2.74		2 7 37.6
3.1	6 18 54.87	18 54.31	23 42 14.7	42 14.8	7.1768	6.576	2.74		3 7 33.7
4.0	6 18 52.82	18 52.32	23 42 15.2	42 15.2	7.1281	6.464	2.74		4 7 29.7
5.0	6 18 51.00	18 50.56	23 42 15.5	42 15.6	7.0727	6.318	2.74		5 7 25.7
6.0	6 18 49.41	18 49.04	23 42 15.8	42 15.8	7.0090	6.120	2.74		6 7 21.8
7.0	6 18 48.06	18 47.74	23 42 15.9	42 15.9	6.9344	+5.966	2.74		7 7 17.8
8.0	6 18 46.94	18 46.68	23 42 15.9	42 15.9	6.8442		2.74		8 7 13.9
9.0	6 18 46.05	18 45.85	23 42 15.8	42 15.8	6.7301	-5.902	2.74		9 7 9.9
10.0	6 18 45.39	18 45.26	23 42 15.6	42 15.5	6.5740	6.929	2.74		10 7 6.0
11.0	6 18 44.97	18 44.90	23 42 15.3	42 15.2	6.3274	6.371	2.74		11 7 2.1
12.0	6 18 44.78	18 44.77	23 42 14.9	42 14.8	-5.6859	6.483	2.74		12 6 58.1
13.0	6 18 44.82	18 44.88	23 42 14.4	42 14.2	+6.0525	6.578	2.74		13 6 54.2
14.0	6 18 45.10	18 45.22	23 42 13.8	42 13.6	6.4421	6.664	2.74		14 6 50.2
15.0	6 18 45.62	18 45.80	23 42 13.1	42 12.8	6.6447	6.746	2.74		15 6 46.3
16.0	6 18 46.37	18 46.61	23 42 12.3	42 12.0	6.7813	6.814	2.74		16 6 42.4
17.0	6 18 47.36	18 47.66	23 42 11.4	42 11.1	6.8852	6.871	2.74		17 6 38.5
18.0	6 18 48.58	18 48.94	23 42 10.3	42 10.0	6.9686	6.922	2.74		18 6 34.6
19.0	6 18 50.04	18 50.46	23 42 9.2	42 8.9	7.0382	6.964	2.74		19 6 30.7
20.0	6 18 51.73	18 52.21	23 42 8.0	42 7.6	7.0985	6.996	2.74		20 6 26.8
21.0	6 18 53.65	18 54.20	23 42 6.7	42 6.3	7.1514	7.020	2.73		21 6 22.9
22.0	6 18 55.81	18 56.42	23 42 5.2	42 4.8	7.1986	7.042	2.73		22 6 19.0
23.0	6 18 58.20	18 58.87	23 42 3.7	42 3.2	7.2408	7.064	2.73		23 6 15.1
24.0	6 19 0.83	19 1.55	23 42 2.0	42 1.5	7.2784	7.067	2.73		24 6 11.2
25.0	6 19 3.67	19 4.46	23 42 0.2	41 59.7	7.3129	7.111	2.73		25 6 7.3
26.0	6 19 6.75	19 7.60	23 41 58.3	41 57.8	7.3452	7.134	2.73		26 6 3.4
27.0	6 19 10.05	19 10.96	23 41 56.3	41 55.8	7.3754	7.156	2.73		27 5 59.6
28.0	6 19 13.58	19 14.55	23 41 54.2	41 53.6	7.4034	7.178	2.73		28 5 55.7
29.0	6 19 17.34	19 18.37	23 41 52.0	41 51.3	7.4296	7.200	2.73		29 5 51.8
30.0	6 19 21.33	19 22.42	23 41 49.6	41 49.0	7.4542	7.222	2.73		30 5 48.0
31.0	6 19 25.54	19 26.69	23 41 47.2	41 46.5	7.4773	7.242	2.72		31 5 44.1
Apr. 1.0	6 19 29.97	19 31.18	23 41 44.6	41 44.0	7.4992	7.260	2.72		1 5 40.2
2.0	6 19 34.63	19 35.89	23 41 42.0	41 41.3	7.5200	7.277	2.72		2 5 36.4
3.0	6 19 39.51	19 40.83	23 41 39.2	41 38.5	7.5398	7.293	2.72		3 5 32.5
4.0	6 19 44.61	19 45.99	23 41 36.3	41 35.5	7.5588	7.310	2.72		4 5 28.7
5.0	6 19 49.93	19 51.38	23 41 33.3	41 32.5	7.5769	7.326	2.71		5 5 24.9
6.0	6 19 55.48	19 56.98	23 41 30.2	41 29.4	7.5940	7.342	2.71		6 5 21.0
7.0	6 20 1.24	20 2.80	23 41 27.0	41 26.1	7.6103	7.358	2.71		7 5 17.2
8.0	6 20 7.22	20 8.83	23 41 23.6	41 22.7	7.6259	7.373	2.70		8 5 13.4
8.9	6 20 13.41	20 15.08	23 41 20.2	41 19.2	7.6409	7.387	2.70		9 5 9.5
9.9	6 20 19.82	20 21.55	23 41 16.6	41 15.6	7.6552	7.401	2.70		10 5 5.7
10.9	6 20 26.44	20 28.22	23 41 12.9	41 11.9	7.6691	7.415	2.69		11 5 1.9
11.9	6 20 33.26	20 35.10	23 41 9.1	41 8.1	7.6824	7.428	2.69		12 4 58.1
12.9	6 20 40.30	20 42.19	23 41 5.2	41 4.1	7.6950	7.441	2.69		13 4 54.2
13.9	6 20 47.53	20 49.48	23 41 1.1	41 0.0	7.7071	7.453	2.68		14 4 50.4
14.9	6 20 54.97	20 56.97	23 40 57.0	40 55.8	7.7188	7.465	2.68		15 4 46.6
15.9	6 21 2.63	21 4.66	23 40 52.7	40 51.5	7.7302	7.477	2.68		16 4 42.8
16.9	6 21 10.44	21 12.55	23 40 48.3	40 47.1	7.7412	7.489	2.67		17 4 39.0
17.9	6 21 18.48	21 20.64	23 40 43.8	40 42.6	7.7519	7.501	2.67		18 4 35.2
18.9	6 21 26.71	21 28.92	23 40 39.2	40 37.9	7.7621	7.512	2.67		19 4 31.4
19.9	6 21 35.13	21 37.40	23 40 34.5	40 33.2	7.7720	7.523	2.66		20 4 27.6
20.9	6 21 43.75	21 46.07	23 40 29.6	40 28.3	7.7816	7.533	2.66		21 4 23.9
21.9	6 21 52.55	21 54.92	23 40 24.6	40 23.3	7.7910	7.543	2.65		22 4 20.1
22.9	6 22 1.55	22 3.97	23 40 19.5	40 18.1	7.8000	7.553	2.65		23 4 16.3
23.9	6 22 10.73	22 13.20	23 40 14.3	40 12.9	7.8088	7.563	2.64		24 4 12.5
24.9	6 22 20.09	22 22.61	23 40 9.0	40 7.6	7.8173	7.573	2.64		25 4 8.7
25.9	6 22 29.63	22 32.20	23 40 3.6	40 2.1	7.8255	7.583	2.63		26 4 5.0
26.9	6 22 39.36	22 41.97	23 39 58.1	39 56.5	7.8335	7.592	2.63		27 4 1.2
27.9	6 22 49.26	22 51.92	23 39 52.4	39 50.8	7.8413	7.601	2.62		28 3 57.4
28.9	6 22 59.34	23 2.05	23 39 46.6	39 45.0	7.8488	7.610	2.62		29 3 53.7
29.9	6 23 9.59	23 12.35	23 39 40.7	39 39.0	7.8560	7.619	2.61		30 3 49.9
30.9	6 23 20.01	23 22.81	+23 39 34.6	39 33.0	+7.8630	-7.628	+2.60		31 3 46.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May	d h m s	d h m s	° ' "	° ' "					d h m
1.9	6 23 30.63	23 33.45	+23 39 28.5	39 26.8	+7.8699	-7.636	+2.59		2 3 42.4
2.9	6 23 41.35	23 44.25	23 39 22.2	39 20.5	7.8766	7.644	2.58		3 3 38.6
3.9	6 23 52.27	23 55.21	23 39 15.7	39 14.0	7.8831	7.653	2.58		4 3 34.9
4.9	6 24 3.35	24 6.34	23 39 9.1	39 7.4	7.8893	7.662	2.57		5 3 31.1
5.9	6 24 14.59	24 17.62	23 39 2.4	39 0.5	7.8954	7.670	2.56		6 3 27.4
6.9	6 24 25.98	24 29.06	23 38 55.6	38 53.7	7.9013	7.678	2.55		7 3 23.6
7.9	6 24 37.53	24 40.65	23 38 48.6	38 46.7	7.9070	7.686	2.55		8 3 19.9
8.9	6 24 49.23	24 52.39	23 38 41.5	38 39.6	7.9125	7.694	2.54		9 3 16.2
9.9	6 25 1.08	25 4.28	23 38 34.2	38 32.3	7.9179	7.702	2.53		10 3 12.4
10.9	6 25 13.07	25 16.31	23 38 26.9	38 24.9	7.9231	7.710	2.52		11 3 8.7
11.9	6 25 25.21	25 28.48	23 38 19.2	38 17.2	7.9282	7.718	2.51		12 3 5.0
12.9	6 25 37.48	25 40.80	23 38 11.7	38 9.6	7.9330	7.725	2.50		13 3 1.2
13.9	6 25 49.89	25 53.24	23 38 3.9	38 1.8	7.9377	7.733	2.49		14 2 57.5
14.9	6 26 2.44	26 5.82	23 37 56.0	37 53.8	7.9422	7.741	2.48		15 2 53.8
15.8	6 26 15.11	26 18.53	23 37 47.9	37 45.7	7.9467	7.748	2.47		16 2 50.1
16.8	6 26 27.91	26 31.37	23 37 39.7	37 37.5	7.9510	7.755	2.46		17 2 46.4
17.8	6 26 40.84	26 44.33	23 37 31.4	37 29.1	7.9552	7.763	2.46		18 2 42.6
18.8	6 26 53.89	26 57.41	23 37 23.0	37 20.6	7.9593	7.769	2.45		19 2 38.9
19.8	6 27 7.06	27 10.62	23 37 14.4	37 12.0	7.9632	7.776	2.44		20 2 35.2
20.8	6 27 20.35	27 23.94	23 37 5.7	37 3.3	7.9671	7.783	2.43		21 2 31.5
21.8	6 27 33.75	27 37.38	23 36 56.8	36 54.4	7.9708	7.790	2.42		22 2 27.8
22.8	6 27 47.27	27 50.94	23 36 47.8	36 45.3	7.9744	7.796	2.41		23 2 24.1
23.8	6 28 0.91	28 4.60	23 36 38.7	36 36.2	7.9779	7.803	2.40		24 2 20.4
24.8	6 28 14.63	28 18.37	23 36 29.4	36 26.9	7.9813	7.810	2.39		25 2 16.7
25.8	6 28 28.50	28 32.25	23 36 20.0	36 17.4	7.9846	7.816	2.38		26 2 13.0
26.8	6 28 42.45	28 46.23	23 36 10.5	36 7.9	7.9878	7.822	2.37		27 2 9.3
27.8	6 28 56.50	29 0.31	23 36 0.8	35 58.2	7.9908	7.828	2.36		28 2 5.6
28.8	6 29 10.65	29 14.49	23 35 51.0	35 48.4	7.9938	7.834	2.35		29 2 1.9
29.8	6 29 24.89	29 28.75	23 35 41.1	35 38.4	7.9966	7.840	2.34		30 1 58.2
30.8	6 29 39.22	29 43.11	23 35 31.1	35 28.4	7.9993	7.846	2.33		31 1 54.5
31.8	6 29 53.65	29 57.56	23 35 20.9	35 18.2	8.0020	7.852	2.32		1 1 50.8
June 1.8	6 30 8.15	30 12.09	23 35 10.6	35 7.8	8.0045	7.857	2.30		2 1 47.1
2.8	6 30 22.75	30 26.71	23 35 0.2	34 57.4	8.0069	7.863	2.28		3 1 43.4
3.8	6 30 37.42	30 41.40	23 34 49.7	34 46.8	8.0092	7.869	2.26		4 1 39.8
4.8	6 30 52.17	30 56.17	23 34 39.0	34 36.1	8.0114	7.874	2.24		5 1 36.1
5.8	6 31 6.99	31 11.02	23 34 28.2	34 25.2	8.0136	7.879	2.22		6 1 32.4
6.8	6 31 21.88	31 25.93	23 34 17.3	34 14.3	8.0157	7.884	2.20		7 1 28.7
7.8	6 31 36.84	31 40.91	23 34 6.2	34 3.2	8.0177	7.889	2.18		8 1 25.0
8.8	6 31 51.87	31 55.96	23 33 55.0	33 52.0	8.0195	7.894	2.16		9 1 21.3
9.8	6 32 6.95	32 11.07	23 33 43.7	33 40.6	8.0211	7.899	2.14		10 1 17.7
10.8	6 32 22.10	32 26.23	23 33 32.3	33 29.2	8.0227	7.904	2.11		11 1 14.0
11.8	6 32 37.30	32 41.45	23 33 20.8	33 17.6	8.0242	7.908	2.08		12 1 10.3
12.8	6 32 52.55	32 56.72	23 33 9.1	33 5.9	8.0257	7.913	+2.04		13 1 6.6
13.8	6 33 7.85	33 12.05	23 32 57.3	32 54.0	8.0271	7.917			14 1 2.9
14.8	6 33 23.20	33 27.41	23 32 45.4	32 42.1	8.0283	7.921			15 0 59.2
15.8	6 33 38.60	33 42.82	23 32 33.3	32 30.0	8.0294	7.925			16 0 55.6
16.8	6 33 54.03	33 58.27	23 32 21.2	32 17.8	8.0306	7.929			17 0 51.9
17.8	6 34 9.51	34 13.76	23 32 9.0	32 5.6	8.0317	7.933			18 0 48.2
18.8	6 34 25.02	34 29.28	23 31 56.6	31 53.2	8.0327	7.937			19 0 44.5
19.8	6 34 40.56	34 44.83	23 31 44.2	31 40.7	8.0336	7.940			20 0 40.9
20.8	6 34 56.13	35 0.41	23 31 31.6	31 28.1	8.0344	7.944			21 0 37.2
21.7	6 35 11.73	35 16.02	23 31 18.9	31 15.4	8.0351	7.947			22 0 33.5
22.7	6 35 27.36	35 31.65	23 31 6.1	31 2.5	8.0358	7.951			23 0 29.9
23.7	6 35 43.01	35 47.31	23 30 53.2	30 49.6	8.0363	7.954			24 0 26.2
24.7	6 35 58.67	36 2.98	23 30 40.2	30 36.6	8.0368	7.957			25 0 22.5
25.7	6 36 14.36	36 18.67	23 30 27.1	30 23.5	8.0372	7.960			26 0 18.9
26.7	6 36 30.05	36 34.37	23 30 14.0	30 10.3	8.0375	7.963			27 0 15.2
27.7	6 36 45.76	36 50.09	23 30 0.7	29 57.1	8.0378	7.966			28 0 11.5
28.7	6 37 1.47	37 5.81	23 29 47.4	29 43.7	8.0380	7.969			29 0 7.8
29.7	6 37 17.19	37 21.53	23 29 34.0	29 30.3	8.0381	7.972			30 0 4.2
30.7	6 37 32.91	37 37.25	23 29 20.5	29 16.7	8.0381	7.974			31 0 0.5
31.7	6 37 48.63	37 52.98	+23 29 6.9	29 3.1	+8.0380	-7.976			31 23 56.8

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a.		Log of b.		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July	d	h m s	m s	° ' "	° ' "				d h m
	1.7	6 37 48.63	37 52.98	+23 29' 6.9	29' 3.1	+8.0380	-7.976		1 23 56.8
	2.7	6 38 4.35	38 8.70	23 28 53.2	28 49.4	8.0379	7.979		2 23 53.2
	3.7	6 38 20.06	38 24.41	23 28 39.5	28 35.6	8.0377	7.981		3 23 49.5
	4.7	6 38 35.77	38 40.11	23 28 25.6	28 21.7	8.0374	7.983		4 23 45.8
	5.7	6 38 51.46	38 55.80	23 28 11.8	28 7.9	8.0371	7.985		5 23 42.2
	6.7	6 39 7.14	39 11.47	23 27 57.8	27 53.9	8.0366	7.987		6 23 38.5
	7.7	6 39 22.79	39 27.13	23 27 43.8	27 39.9	8.0361	7.989		7 23 34.8
	8.7	6 39 38.43	39 42.76	23 27 29.8	27 25.9	8.0355	7.991		8 23 31.1
	9.7	6 39 54.05	39 58.37	23 27 15.7	27 11.7	8.0349	7.993		9 23 27.5
	10.7	6 40 9.64	40 13.96	23 27 1.5	26 57.5	8.0340	7.995		10 23 23.8
	11.7	6 40 25.19	40 29.51	23 26 47.2	26 43.3	8.0329	7.996		11 23 20.1
	12.7	6 40 40.70	40 45.01	23 26 32.9	26 28.9	8.0318	7.998		12 23 16.4
	13.7	6 40 56.18	41 0.48	23 26 18.6	26 14.5	8.0307	7.999		13 23 12.8
	14.7	6 41 11.61	41 15.90	23 26 4.2	26 0.1	8.0295	8.000		14 23 9.1
	15.7	6 41 27.00	41 31.28	23 25 49.8	25 45.7	8.0282	8.001		15 23 5.4
	16.7	6 41 42.34	41 46.61	23 25 35.3	25 31.3	8.0268	8.002	-2.03	16 23 1.7
	17.7	6 41 57.63	42 1.90	23 25 20.9	25 16.8	8.0254	8.002	2.07	17 22 58.0
	18.7	6 42 12.87	42 17.12	23 25 6.4	25 2.3	8.0239	8.003	2.10	18 22 54.4
	19.7	6 42 28.06	42 32.30	23 24 51.9	24 47.8	8.0222	8.003	2.12	19 22 50.7
	20.7	6 42 43.19	42 47.41	23 24 37.3	24 33.3	8.0205	8.004	2.14	20 22 47.0
	21.7	6 42 58.26	43 2.46	23 24 22.7	24 18.7	8.0188	8.005	2.16	21 22 43.3
	22.7	6 43 13.27	43 17.46	23 24 8.1	24 4.1	8.0171	8.005	2.18	22 22 39.6
	23.7	6 43 28.21	43 32.39	23 23 53.5	23 49.5	8.0152	8.005	2.19	23 22 36.0
	24.7	6 43 43.09	43 47.26	23 23 38.9	23 34.9	8.0132	8.005	2.21	24 22 32.3
	25.7	6 43 57.90	44 2.05	23 23 24.4	23 20.3	8.0111	8.005	2.23	25 22 28.6
	26.7	6 44 12.64	44 16.77	23 23 9.8	23 5.7	8.0089	8.005	2.25	26 22 24.9
	27.7	6 44 27.30	44 31.41	23 22 55.2	22 51.1	8.0066	8.004	2.26	27 22 21.2
	28.6	6 44 41.88	44 45.97	23 22 40.6	22 36.6	8.0042	8.004	2.28	28 22 17.5
	29.6	6 44 56.38	45 0.44	23 22 26.1	22 22.0	8.0017	8.003	2.30	29 22 13.8
	30.6	6 45 10.80	45 14.84	23 22 11.6	22 7.5	7.9991	8.003	2.31	30 22 10.1
31.6	6 45 25.12	45 29.14	23 21 57.1	21 53.0	7.9963	8.002	2.33	31 22 6.4	
Aug.	1.6	6 45 39.35	45 43.35	23 21 42.6	21 38.5	7.9933	8.001	2.34	1 22 2.7
	2.6	6 45 53.49	45 57.46	23 21 28.1	21 24.1	7.9904	8.000	2.35	2 21 59.0
	3.6	6 46 7.53	46 11.47	23 21 13.8	21 9.7	7.9874	7.998	2.37	3 21 55.3
	4.6	6 46 21.47	46 25.38	23 20 59.5	20 55.4	7.9843	7.996	2.38	4 21 51.6
	5.6	6 46 35.30	46 39.19	23 20 45.2	20 41.2	7.9810	7.994	2.39	5 21 47.9
	6.6	6 46 49.03	46 52.89	23 20 31.0	20 27.0	7.9776	7.992	2.40	6 21 44.2
	7.6	6 47 2.66	47 6.49	23 20 16.9	20 12.9	7.9742	7.990	2.41	7 21 40.5
	8.6	6 47 16.17	47 19.97	23 20 2.8	19 58.8	7.9706	7.988	2.42	8 21 36.8
	9.6	6 47 29.57	47 33.34	23 19 48.8	19 44.8	7.9669	7.986	2.43	9 21 33.1
	10.6	6 47 42.85	47 46.59	23 19 34.8	19 30.9	7.9631	7.984	2.44	10 21 29.4
	11.6	6 47 56.02	47 59.73	23 19 21.0	19 17.1	7.9592	7.982	2.45	11 21 25.7
	12.6	6 48 9.07	48 12.75	23 19 7.2	19 3.3	7.9552	7.979	2.46	12 21 22.0
	13.6	6 48 22.00	48 25.64	23 18 53.6	18 49.7	7.9510	7.976	2.47	13 21 18.3
	14.6	6 48 34.80	48 38.41	23 18 40.0	18 36.1	7.9467	7.973	2.48	14 21 14.6
	15.6	6 48 47.47	48 51.04	23 18 26.5	18 22.7	7.9423	7.970	2.49	15 21 10.9
	16.6	6 49 0.01	49 3.55	23 18 13.2	18 9.4	7.9378	7.967	2.49	16 21 7.1
	17.6	6 49 12.42	49 15.93	23 17 59.9	17 56.2	7.9331	7.964	2.50	17 21 3.4
18.6	6 49 24.70	49 28.16	23 17 46.8	17 43.0	7.9282	7.960	2.51	18 20 59.7	
19.6	6 49 36.83	49 40.26	23 17 33.7	17 30.0	7.9231	7.956	2.52	19 20 55.9	
20.6	6 49 48.83	49 52.21	23 17 20.8	17 17.1	7.9179	7.952	2.53	20 20 52.2	
21.6	6 50 0.68	50 4.03	23 17 7.9	17 4.2	7.9126	7.948	2.53	21 20 48.5	
22.6	6 50 12.38	50 15.69	23 16 55.1	16 51.5	7.9071	7.943	2.54	22 20 44.7	
23.6	6 50 23.93	50 27.20	23 16 42.5	16 39.0	7.9015	7.938	2.55	23 20 41.0	
24.6	6 50 35.34	50 38.56	23 16 30.1	16 26.6	7.8957	7.933	2.56	24 20 37.2	
25.6	6 50 46.59	50 49.77	23 16 17.8	16 14.3	7.8897	7.928	2.57	25 20 33.5	
26.6	6 50 57.68	51 0.82	23 16 5.7	16 2.3	7.8835	7.922	2.57	26 20 29.7	
27.6	6 51 8.61	51 11.71	23 15 53.7	15 50.3	7.8772	7.916	2.58	27 20 26.0	
28.6	6 51 19.38	51 22.43	23 15 41.9	15 38.5	7.8706	7.910	2.59	28 20 22.2	
29.6	6 51 29.99	51 32.99	23 15 30.2	15 26.9	7.8638	7.904	2.60	29 20 18.5	
30.6	6 51 40.43	51 43.39	23 15 18.7	15 15.5	7.8568	7.897	2.60	30 20 14.7	
31.6	6 51 50.70	51 53.61	+23 15 7.4	15 4.3	+7.8495	-7.890	-2.61	31 20 11.0	

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	d h m s	m s	+23° 14' 56.4"	14 53.2	+7.8421	-7.883	-2.62		d h m
2.6	6 52 0.80	52 3.66	23 14 45.5	14 42.4	7.8345	7.875	2.63		1 20 7.2
3.5	6 52 10.72	52 13.53	23 14 34.8	14 31.8	7.8266	7.867	2.63		2 20 3.4
4.5	6 52 20.47	52 23.23	23 14 24.4	14 21.4	7.8185	7.859	2.64		3 19 59.7
5.5	6 52 30.04	52 32.75	23 14 14.1	14 11.2	7.8101	7.850	2.64		4 19 55.9
6.5	6 52 39.43	52 42.09	23 14 14.1	14 11.2	7.8101	7.850	2.64		5 19 52.1
7.5	6 52 48.64	52 51.25	23 14 4.1	14 1.2	7.8014	7.841	2.65		6 19 48.3
8.5	6 52 57.66	53 0.22	23 13 54.2	13 51.4	7.7925	7.832	2.65		7 19 44.5
9.5	6 53 6.50	53 9.00	23 13 44.6	13 41.8	7.7833	7.823	2.66		8 19 40.8
10.5	6 53 15.15	53 17.60	23 13 35.1	13 32.5	7.7739	7.813	2.66		9 19 37.0
11.5	6 53 23.62	53 26.01	23 13 25.9	13 23.3	7.7642	7.802	2.67		10 19 33.2
12.5	6 53 31.89	53 34.23	23 13 16.8	13 14.3	7.7542	7.791	2.67		11 19 29.4
13.5	6 53 39.97	53 42.25	23 13 8.0	13 5.6	7.7438	7.780	2.68		12 19 25.6
14.5	6 53 47.85	53 50.08	23 12 59.5	12 57.1	7.7329	7.769	2.68		13 19 21.8
15.5	6 53 55.54	53 57.71	23 12 51.1	12 48.8	7.7217	7.757	2.68		14 19 18.0
16.5	6 54 3.02	54 5.14	23 12 43.0	12 40.8	7.7101	7.744	2.69		15 19 14.1
17.5	6 54 10.31	54 12.37	23 12 35.2	12 33.0	7.6981	7.730	2.69		16 19 10.3
18.5	6 54 17.40	54 19.40	23 12 27.6	12 25.5	7.6858	7.716	2.69		17 19 6.5
19.5	6 54 24.28	54 26.22	23 12 20.2	12 18.2	7.6729	7.700	2.70		18 19 2.7
20.5	6 54 30.95	54 32.84	23 12 13.1	12 11.1	7.6593	7.683	2.70		19 18 58.9
21.5	6 54 37.42	54 39.25	23 12 6.2	12 4.3	7.6451	7.665	2.70		20 18 55.1
22.5	6 54 43.68	54 45.44	23 11 59.7	11 57.8	7.6305	7.646	2.71		21 18 51.3
23.5	6 54 49.72	54 51.43	23 11 53.4	11 51.6	7.6153	7.627	2.71		22 18 47.4
24.5	6 54 55.55	54 57.19	23 11 47.4	11 45.7	7.5993	7.607	2.71		23 18 43.6
25.5	6 55 1.17	55 2.74	23 11 41.6	11 40.1	7.5828	7.586	2.71		24 18 39.7
26.5	6 55 6.57	55 8.08	23 11 36.2	11 34.7	7.5653	7.563	2.72		25 18 35.9
27.5	6 55 11.75	55 13.20	23 11 31.0	11 29.6	7.5470	7.539	2.72		26 18 32.0
28.5	6 55 16.72	55 18.11	23 11 26.1	11 24.8	7.5278	7.514	2.72		27 18 28.2
29.5	6 55 21.46	55 22.79	23 11 21.5	11 20.3	7.5077	7.489	2.72		28 18 24.3
30.5	6 55 25.99	55 27.25	23 11 17.2	11 16.0	7.4863	7.463	2.72		29 18 20.5
Oct. 1.5	6 55 30.20	55 31.49	23 11 13.1	11 12.0	7.4636	7.434	2.73		30 18 16.6
2.5	6 55 34.37	55 35.50	23 11 9.4	11 8.4	7.4396	7.401	2.73		1 18 12.8
3.5	6 55 38.22	55 39.28	23 11 6.0	11 5.1	7.4141	7.362	2.73		2 18 8.9
4.5	6 55 41.84	55 42.84	23 11 2.9	11 2.1	7.3870	7.315	2.73		3 18 5.0
5.5	6 55 45.24	55 46.17	23 11 0.1	10 59.3	7.3581	7.258	2.73		4 18 1.1
6.5	6 55 48.41	55 49.28	23 10 57.6	10 56.9	7.3272	7.194	2.73		5 17 57.3
7.5	6 55 51.35	55 52.16	23 10 55.3	10 54.7	7.2936	7.128	2.73		6 17 53.4
8.5	6 55 54.07	55 54.81	23 10 53.4	10 52.9	7.2569	7.060	2.73		7 17 49.5
9.4	6 55 56.56	55 57.23	23 10 51.7	10 51.3	7.2163	6.990	2.73		8 17 45.6
10.4	6 55 58.82	55 59.42	23 10 50.4	10 50.1	7.1726	6.910	2.73		9 17 41.7
11.4	6 56 0.84	56 1.39	23 10 49.3	10 49.1	7.1232	6.795	2.73		10 17 37.8
12.4	6 56 2.64	56 3.12	23 10 48.6	10 48.5	7.0678	6.612	2.74		11 17 33.9
13.4	6 56 4.21	56 4.62	23 10 48.2	10 48.2	7.0039	-6.288	2.74		12 17 30.0
14.4	6 56 5.55	56 5.89	23 10 48.0	10 48.1	6.9287		2.74		13 17 26.1
15.4	6 56 6.66	56 6.93	23 10 48.2	10 48.4	6.8377	+6.372	2.74		14 17 22.1
16.4	6 56 7.53	56 7.74	23 10 48.7	10 49.0	6.7224	6.647	2.74		15 17 18.2
17.4	6 56 8.18	56 8.32	23 10 49.5	10 49.8	6.5643	6.816	2.74		16 17 14.3
18.4	6 56 8.59	56 8.66	23 10 50.6	10 51.0	6.3137	6.938	2.74		17 17 10.4
19.4	6 56 8.77	56 8.77	23 10 52.0	10 52.5	+5.6410	7.036	2.74		18 17 6.5
20.4	6 56 8.81	56 8.85	23 10 53.7	10 54.3	-6.0746	7.120	2.74		19 17 2.6
21.4	6 56 8.43	56 8.30	23 10 55.8	10 56.5	6.4469	7.187	2.74		20 16 58.6
22.4	6 56 7.91	56 7.72	23 10 58.2	10 59.0	6.6444	7.246	2.74		21 16 54.7
23.4	6 56 7.16	56 6.89	23 11 0.8	11 1.7	6.7798	7.296	2.74		22 16 50.7
24.4	6 56 6.17	56 5.84	23 11 3.8	11 4.8	6.8830	7.337	2.74		23 16 46.8
25.4	6 56 4.96	56 4.56	23 11 7.1	11 8.1	6.9653	7.374	2.74		24 16 42.8
26.4	6 56 3.51	56 3.05	23 11 10.6	11 11.8	7.0344	7.409	2.74		25 16 38.9
27.4	6 56 1.84	56 1.31	23 11 14.5	11 15.7	7.0942	7.442	2.73		26 16 34.9
28.4	6 55 59.94	55 59.34	23 11 18.7	11 20.0	7.1463	7.474	2.73		27 16 30.9
29.4	6 55 57.81	55 57.15	23 11 23.1	11 24.5	7.1927	7.505	2.73		28 16 27.0
30.4	6 55 55.45	55 54.72	23 11 27.9	11 29.4	7.2349	7.534	2.73		29 16 23.0
31.4	6 55 52.86	55 52.07	23 11 33.0	11 34.6	7.2730	7.558	2.73		30 16 19.0
32.4	6 55 50.04	55 49.19	23 11 38.4	11 40.1	7.3080	7.581	2.73		31 16 15.0
33.4	6 55 47.00	55 46.08	+23 11 44.1	11 45.9	-7.3402	+7.603	-2.73		32 16 11.1

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of <i>a</i> .		Log of <i>b</i> .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Jan. ^d	^{h m s}	^{m s}	^{° ' "}	^{° ' "}					^{d h m}
0.2	0 39 23.94	39 23.97	+ 2 32' 49.3	32' 49.6	+6.9437	+7.895	+2.40	+3.29	0 5 59.0
1.2	0 39 30.25	39 30.28	2 33 0.9	33 1.2	6.9784	7.924	2.49	3.29	1 5 55.0
2.2	0 39 31.69	39 31.73	2 33 13.3	33 13.6	7.0191	7.948	2.49	3.29	2 5 51.1
3.2	0 39 33.26	39 33.30	2 33 26.6	33 27.0	7.0551	7.975	2.49	3.29	3 5 47.2
4.2	0 39 34.96	39 35.01	2 33 40.7	33 41.1	7.0883	8.000	2.49	3.29	4 5 43.3
5.2	0 39 36.79	39 36.84	2 33 55.6	33 56.0	7.1204	8.023	2.49	3.29	5 5 39.4
6.2	0 39 38.75	39 38.80	2 34 11.3	34 11.7	7.1470	8.046	2.49	3.29	6 5 35.5
7.2	0 39 40.83	39 40.89	2 34 27.8	34 28.3	7.1710	8.067	2.48	3.28	7 5 31.6
8.2	0 39 43.03	39 43.09	2 34 45.0	34 45.5	7.1967	8.087	2.48	3.28	8 5 27.7
9.2	0 39 45.37	39 45.43	2 35 3.1	35 3.6	7.2218	8.106	2.48	3.28	9 5 23.8
10.2	0 39 47.83	39 47.90	2 35 21.9	35 22.4	7.2430	8.125	2.48	3.28	10 5 19.9
11.2	0 39 50.41	39 50.48	2 35 41.5	35 42.1	7.2644	8.143	2.47	3.27	11 5 16.0
12.2	0 39 53.11	39 53.19	2 36 1.9	36 2.5	7.2841	8.160	2.47	3.27	12 5 12.1
13.2	0 39 55.94	39 56.02	2 36 23.1	36 23.7	7.3025	8.175	2.47	3.27	13 5 8.2
14.2	0 39 58.89	39 58.97	2 36 45.0	36 45.6	7.3202	8.189	2.47	3.27	14 5 4.3
15.2	0 40 1.96	40 2.05	2 37 7.6	37 8.3	7.3378	8.203	2.46	3.26	15 5 0.5
16.2	0 40 5.15	40 5.24	2 37 31.0	37 31.7	7.3521	8.218	2.46	3.26	16 4 56.7
17.2	0 40 8.45	40 8.54	2 37 55.1	37 55.8	7.3679	8.231	2.46	3.26	17 4 52.8
18.2	0 40 11.87	40 11.97	2 38 20.0	38 20.7	7.3832	8.244	2.45	3.25	18 4 48.9
19.2	0 40 15.41	40 15.51	2 38 45.6	38 46.3	7.3979	8.256	2.45	3.25	19 4 45.0
20.2	0 40 19.07	40 19.18	2 39 11.9	39 12.6	7.4127	8.268	2.44	3.24	20 4 41.1
21.2	0 40 22.85	40 22.96	2 39 39.0	39 39.8	7.4248	8.280	2.44	3.24	21 4 37.3
22.2	0 40 26.74	40 26.85	2 40 6.8	40 7.6	7.4387	8.291	2.44	3.23	22 4 33.4
23.2	0 40 30.75	40 30.87	2 40 35.3	40 36.1	7.4506	8.302	2.43	3.23	23 4 29.5
24.2	0 40 34.87	40 34.99	2 41 4.4	41 5.2	7.4622	8.312	2.43	3.22	24 4 25.7
25.2	0 40 39.11	40 39.23	2 41 34.3	41 35.1	7.4735	8.322	2.42	3.22	25 4 21.8
26.1	0 40 43.45	40 43.58	2 42 4.8	42 5.6	7.4846	8.332	2.42	3.21	26 4 18.0
27.1	0 40 47.90	40 48.03	2 42 36.0	42 36.9	7.4953	8.341	2.41	3.21	27 4 14.1
28.1	0 40 52.46	40 52.59	2 43 7.9	43 8.8	7.5058	8.350	2.41	3.20	28 4 10.3
29.1	0 40 57.13	40 57.26	2 43 40.5	43 41.4	7.5160	8.359	2.40	3.20	29 4 6.4
30.1	0 41 1.91	41 2.05	2 44 13.7	44 14.6	7.5264	8.367	2.40	3.19	30 4 2.6
31.1	0 41 6.80	41 6.94	2 44 47.5	44 48.5	7.5368	8.375	2.39	3.19	31 3 58.7
Feb. 1.1	0 41 11.79	41 11.93	2 45 21.9	45 22.9	7.5449	8.383	2.39	3.18	1 3 54.9
2.1	0 41 16.89	41 17.04	2 45 57.0	45 58.0	7.5538	8.391	2.38	3.18	2 3 51.0
3.1	0 41 22.09	41 22.24	2 46 32.7	46 33.7	7.5609	8.398	2.38	3.17	3 3 47.2
4.1	0 41 27.33	41 27.53	2 47 9.0	47 10.1	7.5691	8.405	2.37	3.17	4 3 43.3
5.1	0 41 32.77	41 32.93	2 47 45.8	47 46.9	7.5772	8.412	2.37	3.16	5 3 39.5
6.1	0 41 38.27	41 38.43	2 48 23.3	48 24.4	7.5851	8.419	2.36	3.16	6 3 35.6
7.1	0 41 43.86	41 44.02	2 49 1.4	49 2.5	7.5933	8.426	2.36	3.15	7 3 31.8
8.1	0 41 49.55	41 49.72	2 49 40.0	49 41.2	7.6002	8.432	2.35	3.14	8 3 28.0
9.1	0 41 55.33	41 55.50	2 50 19.2	50 20.4	7.6069	8.438	2.35	3.13	9 3 24.2
10.1	0 42 1.21	42 1.38	2 50 59.0	51 0.2	7.6136	8.444	2.34	3.13	10 3 20.3
11.1	0 42 7.17	42 7.34	2 51 39.3	51 40.5	7.6202	8.450	2.34	3.12	11 3 16.5
12.1	0 42 13.22	42 13.40	2 52 20.1	52 21.3	7.6266	8.455	2.33	3.11	12 3 12.6
13.1	0 42 19.36	42 19.54	2 53 1.4	53 2.6	7.6333	8.460	2.32	3.10	13 3 8.8
14.1	0 42 25.59	42 25.77	2 53 43.2	53 44.5	7.6389	8.465	2.32	3.09	14 3 4.9
15.1	0 42 31.91	42 32.09	2 54 25.5	54 26.8	7.6444	8.470	2.31	3.08	15 3 1.1
16.1	0 42 38.30	42 38.49	2 55 8.3	55 9.6	7.6498	8.475	2.30	3.07	16 2 57.3
17.1	0 42 44.77	42 44.96	2 55 51.5	55 52.8	7.6552	8.480	2.29	3.06	17 2 53.5
18.1	0 42 51.33	42 51.52	2 56 35.2	56 36.5	7.6605	8.485	2.29	3.05	18 2 49.6
19.1	0 42 57.96	42 58.16	2 57 19.4	57 20.7	7.6657	8.489	2.28	3.04	19 2 45.8
20.1	0 43 4.67	43 4.87	2 58 4.0	58 5.3	7.6710	8.493	2.27	3.03	20 2 42.0
21.1	0 43 11.46	43 11.66	2 58 49.0	58 50.3	7.6757	8.497	2.26	3.02	21 2 38.2
22.1	0 43 18.32	43 18.53	2 59 34.5	59 35.9	7.6801	8.501	2.25	3.01	22 2 34.4
23.1	0 43 25.26	43 25.47	3 0 20.4	0 21.8	7.6845	8.505	2.24	3.00	23 2 30.6
24.1	0 43 32.26	43 32.48	3 1 6.6	1 8.0	7.6889	8.509	2.23	2.99	24 2 26.8
25.1	0 43 39.33	43 39.55	3 1 53.2	1 54.6	7.6932	8.512	2.22	2.98	25 2 23.0
26.1	0 43 46.43	43 46.70	3 2 40.3	2 41.7	7.6977	8.516	2.21	2.97	26 2 19.1
27.1	0 43 53.60	43 53.91	3 3 27.7	3 29.1	7.7013	8.519	2.20	2.96	27 2 15.3
28.1	0 44 0.96	44 1.18	3 4 15.4	4 16.8	7.7046	8.522	2.19	2.95	28 2 11.5
29.1	0 44 8.29	44 8.52	3 5 3.4	5 4.9	7.7081	8.525	2.18	2.94	29 2 7.7
30.1	0 44 15.69	44 15.92	+ 3 5 51.8	5 53.3	+7.7129	+8.528	+2.17	+2.92	30 2 3.9

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
May 1.9	0 52 28.84	52 29.12	+ 3 57 37.8	57 39.5	+7.7239	+8.506	-2.08	-2.93	1 22 12.3
2.9	0 52 36.44	52 36.72	3 58 23.8	58 25.5	7.7210	8.502	2.09	2.94	2 22 8.5
3.9	0 52 43.98	52 44.26	3 59 9.4	59 11.1	7.7180	8.498	2.10	2.95	3 22 4.7
4.9	0 52 51.47	52 51.75	3 59 54.5	59 56.2	7.7149	8.494	2.11	2.96	4 22 0.9
5.9	0 52 58.91	52 59.19	4 0 39.2	0 40.9	7.7117	8.490	2.13	2.97	5 21 57.1
6.9	0 53 6.29	53 6.57	4 1 23.5	1 25.2	7.7083	8.486	2.14	2.98	6 21 53.3
7.9	0 53 13.61	53 13.83	4 2 7.4	2 9.1	7.7048	8.482	2.15	2.99	7 21 49.5
8.9	0 53 21.87	53 21.14	4 2 50.8	2 52.5	7.7011	8.477	2.16	3.00	8 21 45.6
9.9	0 53 29.06	53 29.33	4 3 33.8	3 35.5	7.6973	8.473	2.18	3.01	9 21 41.8
10.9	0 53 35.19	53 35.46	4 4 16.4	4 18.1	7.6933	8.469	2.19	3.02	10 21 38.0
11.9	0 53 42.26	53 42.52	4 4 58.5	5 0.1	7.6893	8.464	2.20	3.03	11 21 34.2
12.9	0 53 49.26	53 49.52	4 5 40.1	5 41.7	7.6851	8.459	2.21	3.04	12 21 30.4
13.9	0 53 56.23	53 56.46	4 6 21.3	6 22.9	7.6806	8.454	2.23	3.05	13 21 26.6
14.9	0 54 3.07	54 3.33	4 7 2.0	7 3.6	7.6760	8.449	2.24	3.06	14 21 22.8
15.8	0 54 9.86	54 10.11	4 7 42.2	7 43.8	7.6713	8.444	2.25	3.07	15 21 19.0
16.8	0 54 16.58	54 16.83	4 8 21.9	8 23.4	7.6665	8.438	2.26	3.08	16 21 15.1
17.8	0 54 23.22	54 23.47	4 9 1.1	9 2.7	7.6617	8.432	2.27	3.09	17 21 11.3
18.8	0 54 29.79	54 30.04	4 9 39.8	9 41.4	7.6568	8.426	2.28	3.10	18 21 7.5
19.8	0 54 36.23	54 36.52	4 10 18.0	10 19.5	7.6517	8.420	2.29	3.11	19 21 3.7
20.8	0 54 42.70	54 42.94	4 10 55.6	10 57.0	7.6464	8.414	2.30	3.11	20 20 59.9
21.8	0 54 49.04	54 49.28	4 11 32.7	11 34.1	7.6412	8.408	2.31	3.12	21 20 56.1
22.8	0 54 55.33	54 55.54	4 12 9.3	12 10.7	7.6349	8.402	2.32	3.13	22 20 52.3
23.8	0 55 1.47	55 1.70	4 12 45.3	12 46.7	7.6291	8.395	2.33	3.14	23 20 48.4
24.8	0 55 7.56	55 7.79	4 13 20.7	13 22.0	7.6234	8.388	2.33	3.14	24 20 44.5
25.8	0 55 13.57	55 13.80	4 13 55.6	13 56.9	7.6180	8.381	2.34	3.15	25 20 40.7
26.8	0 55 19.50	55 19.73	4 14 29.9	14 31.2	7.6114	8.374	2.34	3.16	26 20 36.9
27.8	0 55 25.34	55 25.56	4 15 3.6	15 4.9	7.6050	8.366	2.35	3.17	27 20 33.0
28.8	0 55 31.09	55 31.31	4 15 36.6	15 37.9	7.5971	8.358	2.35	3.17	28 20 29.2
29.8	0 55 36.74	55 36.96	4 16 9.1	16 10.4	7.5902	8.350	2.36	3.18	29 20 25.3
30.8	0 55 42.30	55 42.52	4 16 41.0	16 42.2	7.5832	8.341	2.36	3.18	30 20 21.5
31.8	0 55 47.77	55 47.98	4 17 12.2	17 13.4	7.5760	8.332	2.37	3.19	31 20 17.7
June 1.8	0 55 53.15	55 53.36	4 17 42.8	17 44.0	7.5691	8.323	2.37	3.19	1 20 13.8
2.8	0 55 58.44	55 58.65	4 18 12.8	18 14.0	7.5609	8.314	2.37	3.20	2 20 10.0
3.8	0 56 3.63	56 3.83	4 18 42.2	18 43.4	7.5526	8.304	2.37	3.20	3 20 6.1
4.8	0 56 8.72	56 8.92	4 19 10.9	19 12.1	7.5449	8.294	2.38	3.21	4 20 2.3
5.8	0 56 13.72	56 13.92	4 19 38.9	19 40.0	7.5362	8.284	2.38	3.21	5 19 58.4
6.8	0 56 18.62	56 18.81	4 20 6.3	20 7.4	7.5273	8.274	2.39	3.21	6 19 54.6
7.8	0 56 23.42	56 23.61	4 20 33.0	20 34.1	7.5183	8.263	2.39	3.22	7 19 50.7
8.8	0 56 28.12	56 28.30	4 20 59.1	21 0.2	7.5091	8.253	2.40	3.22	8 19 46.9
9.8	0 56 32.71	56 32.89	4 21 24.5	21 25.5	7.5001	8.240	2.40	3.22	9 19 43.0
10.8	0 56 37.21	56 37.39	4 21 49.2	21 50.2	7.4895	8.228	2.41	3.22	10 19 39.2
11.8	0 56 41.60	56 41.77	4 22 13.2	22 14.2	7.4781	8.216	2.41	3.22	11 19 35.3
12.8	0 56 45.88	56 46.05	4 22 36.6	22 37.6	7.4679	8.204	2.42	3.23	12 19 31.5
13.8	0 56 50.06	56 50.23	4 22 59.3	23 0.2	7.4581	8.191	2.42	3.23	13 19 27.6
14.8	0 56 54.14	56 54.30	4 23 21.3	23 22.2	7.4463	8.177	2.42	3.23	14 19 23.8
15.8	0 56 58.11	56 58.27	4 23 42.6	23 43.5	7.4343	8.163	2.42	3.23	15 19 19.9
16.8	0 57 1.97	57 2.12	4 24 3.2	24 4.1	7.4220	8.148	2.43	3.24	16 19 16.0
17.8	0 57 5.71	57 5.86	4 24 23.1	24 23.9	7.4092	8.133	2.43	3.24	17 19 12.1
18.8	0 57 9.35	57 9.50	4 24 42.3	24 43.1	7.3961	8.117	2.43	3.24	18 19 8.3
19.8	0 57 12.88	57 13.02	4 25 0.8	25 1.6	7.3825	8.100	2.43	3.24	19 19 4.4
20.8	0 57 16.30	57 16.44	4 25 18.6	25 19.3	7.3685	8.082	2.44	3.25	20 19 0.5
21.7	0 57 19.61	57 19.75	4 25 35.6	25 36.3	7.3548	8.063	2.44	3.25	21 18 56.6
22.7	0 57 22.81	57 22.94	4 25 51.9	25 52.6	7.3378	8.043	2.44	3.25	22 18 52.7
23.7	0 57 25.89	57 26.02	4 26 7.5	26 8.1	7.3230	8.023	2.44	3.25	23 18 48.8
24.7	0 57 28.86	57 28.98	4 26 22.4	26 23.0	7.3047	8.002	2.45	3.26	24 18 44.9
25.7	0 57 31.71	57 31.83	4 26 36.5	26 37.0	7.2888	7.980	2.45	3.26	25 18 41.0
26.7	0 57 34.45	57 34.56	4 26 49.9	26 50.4	7.2697	7.956	2.45	3.26	26 18 37.2
27.7	0 57 37.07	57 37.18	4 27 2.6	27 3.1	7.2498	7.930	2.45	3.26	27 18 33.3
28.7	0 57 39.57	57 39.67	4 27 14.5	27 15.0	7.2281	7.902	2.45	3.26	28 18 29.4
29.7	0 57 41.95	57 42.05	4 27 25.6	27 26.0	7.2090	7.873	2.45	3.26	29 18 25.5
30.7	0 57 44.22	57 44.31	4 27 36.0	27 36.4	7.1860	7.841	2.45	3.26	30 18 21.6
31.7	0 57 46.37	57 46.46	+ 4 27 45.7	27 46.1	+7.1617	+7.807	-2.46	-3.26	31 18 17.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
July 1.7	0 57 46.37	57 46.46	+ 4 27 45.7	27 46.1	+7.1617	+7.807	-2.46	-3.26	1 18 17.7
2.7	0 57 48.40	57 48.48	4 27 54.6	27 55.0	7.1361	7.770	2.46	3.26	2 18 13.8
3.7	0 57 50.30	57 50.38	4 28 2.7	28 3.0	7.1088	7.731	2.46	3.26	3 18 9.9
4.7	0 57 52.09	57 52.16	4 28 10.1	28 10.4	7.0796	7.687	2.46	3.26	4 18 6.0
5.7	0 57 53.76	57 53.83	4 28 16.8	28 17.1	7.0484	7.637	2.46	3.26	5 18 2.1
6.7	0 57 55.31	57 55.37	4 28 22.7	28 23.0	7.0148	7.581	2.46	3.26	6 17 58.2
7.7	0 57 56.74	57 56.80	4 28 27.8	28 28.0	6.9783	7.518	2.46	3.26	7 17 54.3
8.7	0 57 58.05	57 58.10	4 28 32.2	28 32.4	6.9385	7.444	2.46	3.26	8 17 50.4
9.7	0 57 59.24	57 59.29	4 28 35.8	28 36.0	6.8947	7.354	2.46	3.26	9 17 46.5
10.7	0 58 0.31	58 0.35	4 28 38.7	28 38.9	6.8469	7.240	2.46	3.26	10 17 42.6
11.7	0 58 1.27	58 1.31	4 28 40.8	28 40.9	6.7910	7.085	2.46	3.26	11 17 38.6
12.7	0 58 2.10	58 2.13	4 28 42.2	28 42.3	6.7281	6.842	2.46	3.26	12 17 34.7
13.7	0 58 2.81	58 2.84	4 28 42.8	28 42.8	6.6545	+6.240	2.46	3.26	13 17 30.8
14.7	0 58 3.40	58 3.42	4 28 42.7	28 42.7	6.5659	-6.541	2.46	3.25	14 17 26.9
15.7	0 58 3.88	58 3.90	4 28 41.8	28 41.8	6.4544	6.939	2.46	3.25	15 17 23.0
16.7	0 58 4.23	58 4.24	4 28 40.2	28 40.1	6.3040	7.143	2.46	3.25	16 17 19.1
17.7	0 58 4.46	58 4.47	4 28 37.8	28 37.7	6.0720	7.281	2.46	3.25	17 17 15.1
18.7	0 58 4.57	58 4.57	4 28 34.7	28 34.6	+5.5406	7.386	2.46	3.25	18 17 11.2
19.7	0 58 4.56	58 4.56	4 28 30.8	28 30.6	-5.6867	7.470	2.46	3.25	19 17 7.2
20.7	0 58 4.43	58 4.42	4 28 26.2	28 26.0	6.1204	7.536	2.46	3.25	20 17 3.3
21.7	0 58 4.18	58 4.17	4 28 20.9	28 20.7	6.3330	7.598	2.46	3.25	21 16 59.3
22.7	0 58 3.81	58 3.79	4 28 14.8	28 14.6	6.4751	7.651	2.46	3.25	22 16 55.4
23.7	0 58 3.32	58 3.30	4 28 8.0	28 7.7	6.5820	7.699	2.46	3.25	23 16 51.4
24.7	0 58 2.71	58 2.68	4 28 0.4	28 0.1	6.6677	7.741	2.46	3.25	24 16 47.5
25.7	0 58 1.98	58 1.95	4 27 52.1	27 51.8	6.7392	7.779	2.46	3.25	25 16 43.5
26.7	0 58 1.13	58 1.09	4 27 43.1	27 42.8	6.8006	7.814	2.46	3.25	26 16 39.6
27.6	0 58 0.16	58 0.12	4 27 33.4	27 33.0	6.8565	7.846	2.46	3.25	27 16 35.6
28.6	0 57 59.07	57 59.02	4 27 22.9	27 22.5	6.8085	7.875	2.46	3.25	28 16 31.7
29.6	0 57 57.87	57 57.82	4 27 11.7	27 11.3	6.9420	7.903	2.46	3.25	29 16 27.7
30.6	0 57 56.55	57 56.49	4 26 59.8	26 59.4	6.9831	7.929	2.45	3.24	30 16 23.8
Aug. 1.6	0 57 55.11	57 55.05	4 26 47.3	26 46.8	7.0148	7.954	2.45	3.24	31 16 19.8
2.6	0 57 53.56	57 53.49	4 26 34.0	26 33.5	7.0457	7.977	2.45	3.24	1 16 15.9
3.6	0 57 51.89	57 51.82	4 26 20.0	26 19.5	7.0771	7.999	2.45	3.24	2 16 11.9
4.6	0 57 50.11	57 50.03	4 26 5.3	26 4.8	7.1076	8.020	2.45	3.24	3 16 8.0
5.6	0 57 48.21	57 48.13	4 25 50.0	25 49.4	7.1327	8.039	2.45	3.24	4 16 4.0
6.6	0 57 46.20	57 46.12	4 25 33.9	25 33.3	7.1566	8.057	2.45	3.24	5 16 0.0
7.6	0 57 44.08	57 44.00	4 25 17.2	25 16.6	7.1781	8.073	2.45	3.23	6 15 56.1
8.6	0 57 41.85	57 41.76	4 24 59.8	24 59.2	7.2004	8.089	2.44	3.23	7 15 52.1
9.6	0 57 39.50	57 39.41	4 24 41.8	24 41.1	7.2227	8.105	2.44	3.22	8 15 48.2
10.6	0 57 37.04	57 36.94	4 24 23.0	24 22.3	7.2430	8.120	2.44	3.22	9 15 44.2
11.6	0 57 34.47	57 34.37	4 24 3.6	24 2.9	7.2599	8.135	2.43	3.21	10 15 40.2
12.6	0 57 31.80	57 31.69	4 23 43.6	23 42.9	7.2762	8.150	2.43	3.21	11 15 36.3
13.6	0 57 29.03	57 28.92	4 23 22.9	23 22.1	7.2826	8.164	2.42	3.20	12 15 32.3
14.6	0 57 26.15	57 26.04	4 23 1.6	23 0.8	7.3035	8.177	2.42	3.20	13 15 28.3
15.6	0 57 23.17	57 23.05	4 22 39.7	22 38.9	7.3237	8.189	2.41	3.19	14 15 24.3
16.6	0 57 20.08	57 19.96	4 22 17.2	22 16.4	7.3385	8.201	2.41	3.19	15 15 20.4
17.6	0 57 16.89	57 16.77	4 21 54.0	21 53.1	7.3521	8.213	2.40	3.18	16 15 16.4
18.6	0 57 13.60	57 13.47	4 21 30.2	21 29.3	7.3653	8.224	2.40	3.18	17 15 12.4
19.6	0 57 10.21	57 10.08	4 21 5.8	21 4.9	7.3782	8.234	2.39	3.17	18 15 8.4
20.6	0 57 6.72	57 6.58	4 20 40.9	20 40.0	7.3906	8.244	2.38	3.16	19 15 4.4
21.6	0 57 3.13	57 2.99	4 20 15.5	20 14.5	7.4027	8.253	2.37	3.15	20 15 0.4
22.6	0 56 59.44	56 59.30	4 19 49.4	19 48.4	7.4139	8.262	2.37	3.15	21 14 56.4
23.6	0 56 55.66	56 55.51	4 19 22.8	19 21.8	7.4243	8.271	2.36	3.14	22 14 52.4
24.6	0 56 51.79	56 51.64	4 18 55.7	18 54.7	7.4349	8.280	2.35	3.13	23 14 48.4
25.6	0 56 47.82	56 47.67	4 18 28.0	18 27.0	7.4452	8.288	2.34	3.12	24 14 44.4
26.6	0 56 43.76	56 43.60	4 17 59.7	17 58.7	7.4559	8.296	2.34	3.11	25 14 40.4
27.6	0 56 39.61	56 39.45	4 17 31.0	17 30.0	7.4638	8.304	2.33	3.10	26 14 36.4
28.6	0 56 35.38	56 35.21	4 17 1.8	17 0.7	7.4725	8.311	2.32	3.09	27 14 32.4
29.6	0 56 31.06	56 30.89	4 16 32.1	16 31.0	7.4816	8.318	2.31	3.08	28 14 28.4
30.6	0 56 26.65	56 26.48	4 16 1.8	16 0.7	7.4900	8.325	2.30	3.07	29 14 24.4
31.6	0 56 22.16	56 21.99	4 15 31.1	15 30.0	7.4977	8.332	2.29	3.06	30 14 20.4
32.6	0 56 17.59	56 17.41	+ 4 15 0.0	14 58.9	-7.5053	-8.339	-2.28	-3.05	31 14 16.4

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of α .		Log of δ .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Sept. 1.6	0 56 12.94	56 12.76	+ 4 14' 28".4	14 27.2	-7.5129	-8.345	-2.27	-3.03	d h m 1 14 12.3
2.5	0 56 8.20	56 8.02	4 13 56.3	13 55.1	7.5201	8.350	2.26	3.02	2 14 8.3
3.5	0 56 3.39	56 3.21	4 13 23.8	13 22.6	7.5263	8.355	2.25	3.00	3 14 4.3
4.5	0 55 58.51	55 58.32	4 12 50.9	12 49.7	7.5331	8.360	2.24	2.99	4 14 0.3
5.5	Q 55 53.57	55 53.38	4 12 17.7	12 16.4	7.5392	8.365	2.23	2.97	5 13 56.3
6.5	0 55 48.55	55 48.36	4 11 44.1	11 42.8	7.5453	8.370	2.22	2.96	6 13 52.3
7.5	0 55 43.46	55 43.27	4 11 10.1	11 8.8	7.5509	8.375	2.21	2.94	7 13 48.2
8.5	0 55 38.31	55 38.11	4 10 35.7	10 34.4	7.5563	8.380	2.20	2.93	8 13 44.2
9.5	0 55 33.09	55 32.89	4 10 1.0	9 59.7	7.5620	8.384	2.18	2.91	9 13 40.2
10.5	0 55 27.80	55 27.60	4 9 25.9	9 24.6	7.5670	8.389	2.17	2.90	10 13 36.2
11.5	0 55 22.45	55 22.25	4 8 50.4	8 49.1	7.5717	8.393	2.16	2.88	11 13 32.1
12.5	0 55 17.05	55 16.84	4 8 14.6	8 13.2	7.5762	8.397	2.15	2.87	12 13 28.1
13.5	0 55 11.59	55 11.38	4 7 38.6	7 37.2	7.5806	8.401	2.13	2.85	13 13 24.1
14.5	0 55 6.08	55 5.87	4 7 2.2	7 0.8	7.5848	8.404	2.12	2.83	14 13 20.1
15.5	0 55 0.52	55 0.31	4 6 25.6	6 24.2	7.5888	8.407	2.10	2.81	15 13 16.0
16.5	0 54 54.91	54 54.70	4 5 48.7	5 47.3	7.5926	8.410	2.09	2.79	16 13 12.0
17.5	0 54 49.25	54 49.03	4 5 11.6	5 10.2	7.5963	8.413	2.07	2.77	17 13 8.0
18.5	0 54 43.54	54 43.32	4 4 34.2	4 32.8	7.5999	8.416	2.05	2.74	18 13 4.0
19.5	0 54 37.78	54 37.56	4 3 56.6	3 55.2	7.6033	8.419	2.03	2.71	19 12 59.9
20.5	0 54 31.98	54 31.76	4 3 18.8	3 17.4	7.6065	8.421	2.01	2.67	20 12 55.9
21.5	0 54 26.14	54 25.92	4 2 40.8	2 39.4	7.6095	8.423	1.99	-2.63	21 12 51.9
22.5	0 54 20.25	54 20.03	4 2 2.6	2 1.2	7.6123	8.425	1.97		22 12 47.9
23.5	0 54 14.33	54 14.11	4 1 24.2	1 22.8	7.6149	8.427	1.94		23 12 43.8
24.5	0 54 8.38	54 8.15	4 0 45.7	0 44.3	7.6172	8.428	1.91		24 12 39.8
25.5	0 54 2.41	54 2.08	4 0 7.1	0 5.7	7.6194	8.429	1.88		25 12 35.8
26.5	0 53 56.40	53 56.17	3 59 28.3	59 26.8	7.6211	8.430	1.84		26 12 31.8
27.5	0 53 50.37	53 50.14	3 58 49.4	58 47.9	7.6227	8.431	1.78		27 12 27.7
28.5	0 53 44.32	53 44.09	3 58 10.5	58 9.0	7.6242	8.432	1.71		28 12 23.7
29.5	0 53 38.23	53 38.02	3 57 31.5	57 30.0	7.6255	8.433	-1.64		29 12 19.7
30.5	0 53 32.15	53 31.92	3 56 52.4	56 50.9	7.6267	8.434			30 12 15.7
Oct. 1.5	0 53 26.03	53 25.80	3 56 13.2	56 11.7	7.6278	8.434			1 12 11.6
2.5	0 53 19.90	53 19.67	3 55 34.0	55 32.5	7.6287	8.435			2 12 7.6
3.5	0 53 13.77	53 13.54	3 54 54.8	54 53.3	7.6295	8.435			3 12 3.6
4.5	0 53 7.63	53 7.40	3 54 15.7	54 14.2	7.6301	8.435			4 11 59.5
5.5	0 53 1.48	53 1.25	3 53 36.6	53 35.1	7.6306	8.434			5 11 55.5
6.5	0 52 55.32	52 55.09	3 52 57.5	52 56.0	7.6308	8.434			6 11 51.5
7.5	0 52 49.15	52 48.92	3 52 18.5	52 17.0	7.6309	8.433			7 11 47.4
8.5	0 52 42.99	52 42.76	3 51 39.5	51 38.0	7.6308	8.432			8 11 43.4
9.4	0 52 36.83	52 36.60	3 51 0.6	50 59.1	7.6305	8.431			9 11 39.3
10.4	0 52 30.68	52 30.45	3 50 21.8	50 20.3	7.6301	8.430			10 11 35.3
11.4	0 52 24.54	52 24.32	3 49 43.1	49 41.6	7.6295	8.428			11 11 31.3
12.4	0 52 18.40	52 18.18	3 49 4.6	49 3.1	7.6287	8.427			12 11 27.2
13.4	0 52 12.28	52 12.06	3 48 26.2	48 24.7	7.6278	8.426			13 11 23.2
14.4	0 52 6.17	52 5.95	3 47 47.9	47 46.4	7.6267	8.424			14 11 19.1
15.4	0 52 0.08	51 59.86	3 47 9.8	47 8.4	7.6255	8.422	+1.70	+2.70	15 11 15.1
16.4	0 51 54.00	51 53.78	3 46 31.8	46 30.4	7.6241	8.420	1.74	2.74	16 11 11.1
17.4	0 51 47.95	51 47.73	3 45 54.1	45 52.7	7.6225	8.418	1.73	2.77	17 11 7.0
18.4	0 51 41.92	51 41.71	3 45 16.6	45 15.2	7.6207	8.415	1.82	2.80	18 11 3.0
19.4	0 51 35.92	51 35.71	3 44 39.3	44 37.9	7.6187	8.412	1.86	2.83	19 10 59.0
20.4	0 51 29.94	51 29.73	3 44 2.2	44 0.8	7.6164	8.409	1.89	2.85	20 10 55.0
21.4	0 51 24.00	51 23.79	3 43 25.4	43 24.0	7.6140	8.406	1.92	2.87	21 10 50.9
22.4	0 51 18.10	51 17.89	3 42 48.9	42 47.5	7.6114	8.403	1.95	2.89	22 10 46.9
23.4	0 51 12.23	51 12.02	3 42 12.7	42 11.4	7.6086	8.399	1.98	2.90	23 10 42.9
24.4	0 51 6.39	51 6.18	3 41 36.8	41 35.5	7.6057	8.395	2.01	2.92	24 10 38.9
25.4	0 51 0.60	51 0.40	3 41 1.2	40 59.9	7.6025	8.391	2.03	2.94	25 10 34.8
26.4	0 50 54.86	50 54.66	3 40 25.9	40 24.6	7.5991	8.387	2.06	2.95	26 10 30.8
27.4	0 50 49.15	50 48.95	3 39 51.0	39 49.7	7.5956	8.383	2.08	2.96	27 10 26.8
28.4	0 50 43.49	50 43.29	3 39 16.4	39 15.1	7.5919	8.378	2.10	2.98	28 10 22.8
29.4	0 50 37.89	50 37.69	3 38 42.2	38 40.9	7.5879	8.373	2.12	2.99	29 10 18.7
30.4	0 50 32.35	50 32.16	3 38 8.4	38 7.1	7.5836	8.368	2.14	3.00	30 10 14.7
31.4	0 50 26.86	50 26.67	3 37 35.1	37 33.9	7.5792	8.363	2.16	3.01	31 10 10.7
32.4	0 50 21.42	50 21.23	+ 3 37 2.1	37 0.9	-7.5744	-8.357	+2.18	+3.02	32 10 6.7

FOR WASHINGTON SIDEREAL NOON AND MERIDIAN TRANSIT.

Day of Month.	Apparent Right Ascension.		Apparent Declination.		Log of a .		Log of b .		Mean Solar Time of Meridian Transit.
	At Sidereal Oh.	At Transit.	At Sidereal Oh.	At Transit.	In R.A.	In Dec.	In R.A.	In Dec.	
Nov. 1.4	^d 0 50 21.42	^{m s} 50 21.23	[°] + 3 37 2.1	['] 37 0.9	-7.5744	-8.357	+2.18	+3.02	^{d h m} 1 10 6.7
2.4	0 50 16.04	50 15.86	3 36 29.5	36 28.3	7.5692	8.351	2.19	3.03	2 10 2.7
3.4	0 50 10.73	50 10.55	3 35 57.4	35 56.2	7.5638	8.345	2.20	3.04	3 9 58.6
4.4	0 50 5.49	50 5.31	3 35 25.8	35 24.7	7.5584	8.339	2.21	3.05	4 9 54.6
5.4	0 50 0.31	50 0.13	3 34 54.6	34 53.5	7.5530	8.332	2.22	3.06	5 9 50.6
6.4	0 49 55.20	49 55.03	3 34 23.9	34 22.8	7.5470	8.325	2.23	3.07	6 9 46.6
7.4	0 49 50.16	49 50.00	3 33 53.8	33 52.7	7.5410	8.317	2.24	3.08	7 9 42.5
8.4	0 49 45.18	49 45.01	3 33 24.2	33 23.2	7.5348	8.309	2.25	3.09	8 9 38.5
9.4	0 49 40.27	49 40.10	3 32 55.0	32 54.0	7.5282	8.302	2.26	3.10	9 9 34.5
10.4	0 49 35.44	49 35.28	3 32 26.4	32 25.4	7.5210	8.294	2.27	3.11	10 9 30.5
11.4	0 49 30.70	49 30.54	3 31 58.4	31 57.4	7.5137	8.286	2.28	3.12	11 9 26.5
12.4	0 49 26.04	49 25.88	3 31 30.9	31 30.0	7.5062	8.277	2.28	3.12	12 9 22.5
13.4	0 49 21.46	49 21.30	3 31 3.9	31 3.0	7.4987	8.268	2.29	3.13	13 9 18.5
14.4	0 49 16.96	49 16.81	3 30 37.5	30 36.6	7.4909	8.258	2.30	3.14	14 9 14.5
15.3	0 49 12.55	49 12.40	3 30 11.7	30 10.8	7.4826	8.248	2.31	3.15	15 9 10.5
16.3	0 49 8.22	49 8.07	3 29 46.6	29 45.8	7.4735	8.238	2.31	3.15	16 9 6.5
17.3	0 49 3.97	49 3.83	3 29 22.0	29 21.2	7.4643	8.227	2.32	3.16	17 9 2.5
18.3	0 48 59.82	48 59.68	3 28 58.0	28 57.2	7.4549	8.216	2.33	3.17	18 8 58.5
19.3	0 48 55.77	48 55.63	3 28 34.7	28 33.9	7.4452	8.204	2.34	3.18	19 8 54.5
20.3	0 48 51.81	48 51.68	3 28 12.0	28 11.2	7.4349	8.191	2.34	3.18	20 8 50.5
21.3	0 48 47.94	48 47.81	3 27 50.0	27 49.2	7.4237	8.178	2.35	3.19	21 8 46.5
22.3	0 48 44.17	48 44.04	3 27 28.7	27 28.0	7.4116	8.164	2.36	3.20	22 8 42.5
23.3	0 48 40.51	48 40.39	3 27 8.0	27 7.3	7.3991	8.150	2.37	3.21	23 8 38.5
24.3	0 48 36.95	48 36.83	3 26 48.0	26 47.3	7.3860	8.135	2.37	3.21	24 8 34.5
25.3	0 48 33.48	48 33.36	3 26 28.6	26 27.9	7.3744	8.120	2.38	3.22	25 8 30.5
26.3	0 48 30.12	48 30.01	3 26 10.0	26 9.3	7.3614	8.104	2.39	3.22	26 8 26.5
27.3	0 48 26.87	48 26.76	3 25 52.1	25 51.4	7.3474	8.087	2.40	3.23	27 8 22.6
28.3	0 48 23.72	48 23.61	3 25 34.9	25 34.2	7.3323	8.068	2.40	3.23	28 8 18.6
29.3	0 48 20.68	48 20.58	3 25 18.4	25 17.8	7.3165	8.049	2.41	3.24	29 8 14.6
30.3	0 48 17.75	48 17.65	3 25 2.6	25 2.0	7.3003	8.029	2.41	3.24	30 8 10.6
Dec. 1.3	0 48 14.93	48 14.84	3 24 47.6	24 47.0	7.2833	8.008	2.42	3.25	1 8 6.6
2.3	0 48 12.23	48 12.14	3 24 33.3	24 32.8	7.2656	7.985	2.42	3.25	2 8 2.6
3.3	0 48 9.63	48 9.54	3 24 19.8	24 19.3	7.2473	7.961	2.43	3.25	3 7 58.7
4.3	0 48 7.15	48 7.07	3 24 7.0	24 6.5	7.2272	7.935	2.43	3.25	4 7 54.7
5.3	0 48 4.79	48 4.71	3 23 55.0	23 54.5	7.2052	7.908	2.44	3.26	5 7 50.7
6.3	0 48 2.55	48 2.47	3 23 43.7	23 43.3	7.1820	7.879	2.44	3.26	6 7 46.7
7.3	0 48 0.42	48 0.35	3 23 33.2	23 32.8	7.1576	7.846	2.44	3.26	7 7 42.8
8.3	0 47 58.41	47 58.34	3 23 23.5	23 23.1	7.1316	7.812	2.44	3.26	8 7 38.8
9.3	0 47 56.52	47 56.46	3 23 14.5	23 14.1	7.1041	7.776	2.45	3.26	9 7 34.8
10.3	0 47 54.75	47 54.69	3 23 6.3	23 6.0	7.0746	7.734	2.45	3.26	10 7 30.8
11.3	0 47 53.09	47 53.04	3 22 58.9	22 58.6	7.0430	7.687	2.45	3.26	11 7 26.8
12.3	0 47 51.56	47 51.51	3 22 52.3	22 52.0	7.0089	7.634	2.45	3.26	12 7 22.9
13.3	0 47 50.15	47 50.11	3 22 46.5	22 46.3	6.9719	7.574	2.46	3.27	13 7 18.9
14.3	0 47 48.86	47 48.82	3 22 41.5	22 41.3	6.9315	7.504	2.46	3.27	14 7 15.0
15.3	0 47 47.70	47 47.67	3 22 37.3	22 37.1	6.8849	7.421	2.46	3.27	15 7 11.1
16.3	0 47 46.66	47 46.63	3 22 33.9	22 33.8	6.8306	7.319	2.46	3.27	16 7 7.1
17.3	0 47 45.75	47 45.73	3 22 31.3	22 31.2	6.7710	7.174	2.47	3.28	17 7 3.2
18.3	0 47 44.96	47 44.94	3 22 29.6	22 29.6	6.7049	6.956	2.47	3.28	18 6 59.3
19.3	0 47 44.29	47 44.27	3 22 28.7	22 28.7	6.6234	-6.541	2.47	3.28	19 6 55.3
20.3	0 47 43.75	47 43.74	3 22 28.6	22 28.6	6.5183	+6.219	2.47	3.28	20 6 51.4
21.2	0 47 43.34	47 43.33	3 22 29.3	22 29.3	6.3794	6.883	2.48	3.28	21 6 47.5
22.2	0 47 43.06	47 43.05	3 22 30.8	22 30.9	6.1740	7.120	2.48	3.28	22 6 43.5
23.2	0 47 42.91	47 42.91	3 22 33.1	22 33.2	-5.7958	7.273	2.48	3.28	23 6 39.6
24.2	0 47 42.88	47 42.88	3 22 36.2	22 36.4	+5.3857	7.392	2.48	3.28	24 6 35.7
25.2	0 47 42.98	47 42.99	3 22 40.2	22 40.4	6.0591	7.475	2.49	3.29	25 6 31.7
26.2	0 47 43.21	47 43.22	3 22 45.0	22 45.2	6.3114	7.558	2.49	3.29	26 6 27.8
27.2	0 47 43.56	47 43.57	3 22 50.5	22 50.7	6.4700	7.620	2.49	3.29	27 6 23.8
28.2	0 47 44.04	47 44.06	3 22 56.9	22 57.1	6.5859	7.674	2.49	3.29	28 6 19.9
29.2	0 47 44.66	47 44.68	3 23 4.1	23 4.3	6.6773	7.722	2.50	3.30	29 6 16.0
30.2	0 47 45.41	47 45.44	3 23 12.1	23 12.4	6.7528	7.766	2.50	3.30	30 6 12.0
31.2	0 47 46.28	47 46.31	3 23 20.9	23 21.2	6.8170	7.807	2.50	3.30	31 6 8.1
32.2	0 47 47.28	47 47.32	+ 3 23 30.5	23 30.9	+6.8731	+7.844	+2.50	+3.30	32 6 4.2

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Jan. 1	7.64	26.47	13.41	2.97	26.37	7.88	0.21	1.82	0.58
6	7.13	24.38	13.48	2.77	24.30	7.93	0.20	1.67	0.58
11	6.76	22.44	13.43	2.63	22.35	7.91	0.19	1.56	0.59
16	6.49	20.66	13.27	2.53	20.59	7.81	0.18	1.44	0.58
21	6.30	19.07	13.00	2.45	19.00	7.66	0.18	1.33	0.57
26	6.18	17.66	12.64	2.40	17.60	7.44	0.17	1.24	0.56
31	6.11	16.41	12.22	2.37	16.35	7.20	0.17	1.15	0.54
Feb. 5	6.10	15.31	11.75	2.37	15.26	6.93	0.17	1.08	0.52
10	6.16	14.34	11.26	2.39	14.29	6.65	0.17	1.01	0.50
15	6.30	13.48	10.77	2.45	13.42	6.35	0.17	0.94	0.48
20	6.57	12.70	10.29	2.56	12.65	6.05	0.17	0.90	0.45
25	7.01	12.02	9.82	2.73	11.97	5.78	0.18	0.84	0.43
Mar. 2	7.71	11.40	9.36	3.00	11.36	5.53	0.20	0.80	0.41
7	8.75	10.84	8.93	3.41	10.81	5.28	0.23	0.76	0.39
12	10.18	10.34	8.52	3.96	10.30	5.04	0.27	0.72	0.37
17	11.85	9.88	8.15	4.61	9.80	4.82	0.31	0.68	0.35
22	13.42	9.47	7.81	5.22	9.43	4.60	0.35	0.65	0.34
27	14.35	9.10	7.49	5.59	9.07	4.42	0.37	0.62	0.32
Apr. 1	14.40	8.75	7.09	5.63	8.72	4.24	0.37	0.59	0.31
6	13.71	8.44	6.91	5.33	8.41	4.08	0.36	0.57	0.30
11	12.68	8.14	6.65	4.93	8.11	3.93	0.33	0.55	0.29
16	11.58	7.88	6.42	4.51	7.85	3.78	0.30	0.53	0.27
21	10.57	7.63	6.20	4.11	7.60	3.65	0.27	0.51	0.26
26	9.67	7.40	6.00	3.76	7.38	3.54	0.25	0.49	0.25
May 1	8.88	7.19	5.81	3.46	7.16	3.43	0.23	0.48	0.25
6	8.23	6.99	5.64	3.20	6.97	3.33	0.21	0.47	0.24
11	7.63	6.81	5.47	2.97	6.78	3.23	0.20	0.45	0.23
16	7.16	6.64	5.32	2.79	6.62	3.14	0.19	0.45	0.22
21	6.83	6.48	5.18	2.65	6.46	3.05	0.18	0.44	0.22
26	6.57	6.34	5.06	2.56	6.32	2.98	0.18	0.43	0.21
31	6.49	6.23	4.93	2.53	6.19	2.91	0.18	0.42	0.20
June 5	6.59	6.09	4.82	2.56	6.06	2.84	0.19	0.42	0.19
10	6.86	5.97	4.72	2.67	5.95	2.77	0.20	0.41	0.19
15	7.23	5.87	4.62	2.83	5.84	2.72	0.21	0.41	0.18
20	7.82	5.77	4.53	3.04	5.74	2.67	0.22	0.40	0.18
25	8.48	5.67	4.45	3.30	5.65	2.62	0.24	0.40	0.18
30	9.24	5.59	4.37	3.60	5.57	2.57	0.26	0.40	0.18
July 5	10.12	5.51	4.30	3.94	5.50	2.53	0.28	0.40	0.17
10	11.11	5.44	4.23	4.32	5.42	2.49	0.30	0.39	0.17
15	12.17	5.38	4.17	4.74	5.35	2.45	0.33	0.39	0.17
20	13.23	5.32	4.11	5.15	5.30	2.41	0.35	0.38	0.16
25	14.11	5.26	4.05	5.49	5.24	2.38	0.37	0.38	0.16
30	14.49	5.21	4.00	5.64	5.19	2.35	0.38	0.37	0.16
Aug. 4	14.11	5.17	3.95	5.49	5.15	2.33	0.38	0.37	0.16
9	12.98	5.13	3.90	5.05	5.11	2.30	0.35	0.36	0.15
14	11.44	5.10	3.86	4.45	5.07	2.28	0.31	0.36	0.15
19	9.87	5.07	3.82	3.84	5.05	2.26	0.27	0.35	0.15
24	8.55	5.05	3.79	3.33	5.03	2.23	0.23	0.35	0.15
29	7.56	5.02	3.76	2.94	5.00	2.21	0.20	0.34	0.15
Sept. 3	6.90	5.01	3.73	2.68	4.99	2.20	0.18	0.34	0.15
8	6.48	5.00	3.70	2.52	4.98	2.18	0.17	0.34	0.15
13	6.25	4.99	3.68	2.43	4.97	2.16	0.16	0.33	0.15
18	6.14	4.98	3.65	2.39	4.96	2.14	0.16	0.33	0.15
23	6.12	4.98	3.63	2.38	4.96	2.13	0.16	0.33	0.15
28	6.16	4.98	3.61	2.40	4.96	2.13	0.16	0.33	0.15
Oct. 3	6.26	4.99	3.59	2.44	4.97	2.12	0.16	0.33	0.15
8	6.43	5.00	3.58	2.50	4.98	2.11	0.17	0.33	0.15
13	6.66	5.01	3.56	2.59	5.00	2.10	0.18	0.34	0.15
18	6.97	5.03	3.55	2.71	5.01	2.10	0.19	0.34	0.15
23	7.40	5.05	3.55	2.88	5.03	2.09	0.20	0.35	0.15

HORIZONTAL PARALLAXES AND SEMIDIAMETERS.

Mean Noon.	HORIZONTAL PARALLAXES.			SEMIDIAMETERS.			SID. TIME OF SEMIDIAMETER PASSING THE MERIDIAN.		
	♂	♀	♂	♂	♀	♂	♂	♀	♂
Oct. 28	7.97	5.07	3.54	3.10	5.05	2.08	0.22	0.35	0.13
Nov. 2	8.73	5.10	3.54	3.40	5.07	2.08	0.25	0.35	0.15
7	9.76	5.13	3.53	3.80	5.11	2.08	0.28	0.36	0.15
12	11.06	5.16	3.53	4.31	5.15	2.08	0.31	0.37	0.15
17	12.26	5.20	3.53	4.77	5.18	2.08	0.34	0.37	0.15
22	12.63	5.24	3.52	4.91	5.21	2.08	0.35	0.38	0.15
27	11.67	5.23	3.52	4.54	5.26	2.08	0.33	0.38	0.15
Dec. 2	10.20	5.33	3.53	3.97	5.31	2.08	0.27	0.39	0.15
7	8.92	5.38	3.53	3.47	5.36	2.08	0.24	0.39	0.15
12	7.98	5.43	3.53	3.11	5.41	2.08	0.22	0.40	0.15
17	7.32	5.49	3.53	2.86	5.47	2.08	0.20	0.40	0.15
22	6.85	5.56	3.54	2.67	5.53	2.08	0.19	0.40	0.15
27	6.52	5.63	3.55	2.54	5.60	2.09	0.18	0.40	0.15
32	6.20	5.70	3.55	2.45	5.67	2.10	0.18	0.40	0.15
Mean Noon.	♂	♀	♂	♂	♀	♂	♂	♀	♂
Jan. 1	1.44	0.82	0.47	16.19	7.45	1.86	1.19	0.51	0.12
11	1.43	0.83	0.47	16.03	7.55	1.86	1.17	0.52	0.12
21	1.42	0.84	0.47	15.94	7.66	1.85	1.16	0.53	0.12
31	1.42	0.85	0.47	15.90	7.78	1.85	1.15	0.54	0.12
Feb. 10	1.42	0.87	0.47	15.92	7.91	1.84	1.15	0.55	0.12
20	1.43	0.88	0.46	15.99	8.05	1.83	1.15	0.56	0.12
Mar. 2	1.44	0.90	0.46	16.11	8.18	1.81	1.15	0.57	0.12
12	1.45	0.91	0.46	16.29	8.31	1.80	1.16	0.58	0.12
22	1.47	0.92	0.45	16.53	8.43	1.78	1.18	0.59	0.12
Apr. 1	1.50	0.94	0.45	16.82	8.55	1.77	1.20	0.59	0.12
11	1.53	0.95	0.45	17.18	8.65	1.75	1.22	0.60	0.12
21	1.57	0.96	0.44	17.58	8.72	1.74	1.24	0.60	0.12
May 1	1.61	0.96	0.44	18.05	8.76	1.73	1.29	0.60	0.12
11	1.66	0.96	0.44	18.57	8.77	1.71	1.31	0.60	0.12
21	1.71	0.96	0.44	19.14	8.76	1.70	1.35	0.60	0.11
31	1.76	0.96	0.43	19.75	8.72	1.70	1.39	0.60	0.11
June 10	1.82	0.95	0.43	20.40	8.65	1.69	1.43	0.60	0.11
20	1.88	0.94	0.43	21.07	8.56	1.69	1.47	0.60	0.11
30	1.94	0.93	0.43	21.74	8.45	1.69	1.53	0.59	0.11
July 10	2.00	0.91	0.43	22.39	8.33	1.69	1.57	0.58	0.11
20	2.05	0.90	0.43	22.97	8.20	1.70	1.61	0.57	0.11
30	2.09	0.89	0.43	23.46	8.07	1.70	1.65	0.56	0.11
Aug. 9	2.12	0.87	0.44	23.82	7.93	1.71	1.68	0.55	0.11
19	2.14	0.86	0.44	24.02	7.80	1.72	1.70	0.54	0.12
29	2.15	0.84	0.44	24.05	7.67	1.73	1.70	0.53	0.12
Sept. 8	2.13	0.83	0.45	23.91	7.56	1.74	1.70	0.52	0.12
18	2.10	0.82	0.45	23.59	7.46	1.76	1.68	0.52	0.12
28	2.06	0.81	0.45	23.13	7.37	1.77	1.65	0.51	0.12
Oct. 8	2.01	0.80	0.46	22.57	7.29	1.79	1.61	0.51	0.12
18	1.96	0.79	0.46	21.94	7.22	1.81	1.56	0.50	0.12
28	1.90	0.79	0.47	21.26	7.17	1.82	1.51	0.50	0.12
Nov. 7	1.84	0.78	0.47	20.59	7.14	1.84	1.46	0.50	0.12
17	1.78	0.78	0.47	19.93	7.13	1.85	1.41	0.50	0.12
27	1.72	0.78	0.47	19.31	7.14	1.86	1.36	0.50	0.12
Dec. 7	1.67	0.79	0.48	18.73	7.17	1.86	1.32	0.50	0.13
17	1.62	0.79	0.48	18.20	7.22	1.87	1.28	0.51	0.13
27	1.58	0.80	0.48	17.73	7.28	1.87	1.25	0.51	0.13
37	1.55	0.81	0.48	17.33	7.35	1.87	1.22	0.52	0.13

NOTE. — For Neptune the Horizontal Parallax = 0".28 (between Jan. 18 and June 19.)

" " " " = 0".29 (before Jan. 18, between June 19 and Aug. 24, and after Nov. 18.)

" " " " = 0".30 (between Aug. 24 and Nov. 18.)

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Jan. 1.0	+1857499	7517	-8857718	7535	-3842935	3358	280° 53' 22.0	22.5	+0.36	9.9 926631	
1.5	1143350	3365	-8842234	2051	-3836216	6638	281 23 57.4	57.7	0.39	926646	
2.0	2029052	9063	-8826559	5876	-3829197	9618	281 54 32.9	33.1	0.42	926665	
2.5	2114509	4607	-8809193	9010	-3821878	2298	282 25 8.5	8.6	0.45	926689	
3.0	2199982	9986	-8791637	1455	-3814262	4681	282 55 44.0	44.0	0.47	926717	
3.5	+2285194	5194	-8773393	3212	-3806347	6765	283 26 19.6	19.5	+0.48	926749	
4.0	2370228	0224	-8754461	4282	-3798135	8552	283 56 55.2	55.0	0.48	926785	
4.5	2455078	5070	-8734845	4667	-3789626	-0042	284 27 30.8	30.5	0.47	926825	
5.0	2539736	9725	-8714545	4369	-3780820	1235	284 58 6.3	5.9	0.45	926870	
5.5	2624196	4181	-8693564	3389	-3771718	2132	285 28 41.8	41.4	0.43	926919	
6.0	+2708450	8431	-8671903	1730	-3762322	2735	285 59 17.2	16.7	+0.40	926971	
6.5	2772492	2469	-8649566	9304	-3752632	3044	286 29 52.6	52.1	0.36	927028	
7.0	28476314	6288	-8626553	6383	-3742648	3059	287 0 27.9	27.3	0.32	927089	
7.5	29159090	9880	-8602-64	2696	-3732372	2782	287 31 3.2	2.5	0.28	927154	
8.0	3043271	3238	-8578504	8338	-3721805	2214	288 1 38.3	37.5	0.23	927223	
8.5	+3126393	6355	-8553474	3310	-3710948	1356	288 32 13.3	12.4	+0.18	927297	
9.0	3202969	9229	-8527776	7614	-3699802	-0209	289 2 48.1	47.0	0.12	927376	
9.5	3291892	1848	-8501413	1253	-3688368	8775	289 33 22.9	21.8	+0.16	927459	
10.0	3374254	4237	-8474357	3229	-3676646	7052	290 3 57.5	56.3	-0.01	927547	
10.5	3456350	6299	-8446700	6544	-3664638	5043	290 34 31.9	31.7	0.08	927640	
11.0	+3539172	8118	-8418356	8203	-3652345	2749	291 5 6.1	4.8	-0.14	927738	
11.5	3619714	9657	-8390359	9208	-3639769	-0172	291 35 40.4	39.1	0.20	927841	
12.0	3700971	0911	-8359711	9563	-3626309	7311	292 6 14.3	12.9	0.26	927949	
12.5	3781937	1874	-8329413	9267	-3613768	4170	292 36 48.0	46.5	0.32	928063	
13.0	3862604	2538	-8298469	8326	-3600347	0748	293 7 21.6	20.0	0.38	928182	
13.5	+3942968	2809	-8266882	6741	-3586646	7046	293 37 55.0	53.3	-0.43	928307	
14.0	4023022	2950	-8234654	4516	-3572666	3065	294 8 28.2	26.4	0.48	928438	
14.5	4102761	2686	-8201789	1654	-3558410	8809	294 38 61.2	59.3	0.52	928575	
15.0	4182177	2099	-8168290	8158	-3543878	4276	295 9 34.0	32.0	0.55	928718	
15.5	4261266	1135	-8134159	4030	-3529072	9470	295 40 6.6	4.6	0.58	928867	
16.0	+4340022	9938	-8099399	9273	-3513993	4390	296 10 39.0	36.9	-0.60	929022	
16.5	4418440	8353	-8064013	3890	-3498642	9038	296 41 11.2	9.1	0.62	929184	
17.0	4496513	6423	-8028005	7885	-3483320	3415	297 11 43.3	41.1	0.63	929352	
17.5	4574236	4143	-7991377	1265	-3467129	7523	297 42 15.2	13.0	0.63	929527	
18.0	4651634	1509	-7954132	4019	-3450970	1363	298 12 46.9	44.6	0.62	929709	
18.5	+4729611	8513	-7916273	6163	-3434544	4936	298 43 18.3	15.9	-0.60	929898	
19.0	4805252	5152	-7877803	7607	-3417853	8244	299 13 49.5	47.0	0.58	930093	
19.5	4881521	1418	-7838725	8622	-3400898	1288	299 44 20.5	17.9	0.55	930295	
20.0	4957412	7307	-7799042	8943	-3383679	4068	300 14 51.4	48.7	0.51	930504	
20.5	5032921	2813	-7758757	8661	-3366199	6687	300 45 22.1	19.4	0.46	930720	
21.0	+5108941	7931	-7717873	7781	-3348459	8846	301 15 52.6	49.8	-0.41	930943	
21.5	5182769	2657	-7676303	6305	-3330461	0847	301 46 23.0	20.2	0.36	931173	
22.0	5257099	6085	-7634320	4236	-3312215	2689	302 16 53.2	50.3	0.30	931409	
22.5	5331024	0908	-7591637	1577	-3293692	4075	302 47 23.3	20.4	0.24	931652	
23.0	5404539	4421	-7548407	8331	-3274925	5306	303 17 53.2	50.2	0.17	931902	
23.5	+5477639	7519	-7504573	4501	-3255904	6284	303 48 23.0	19.9	-0.10	932158	
24.0	5550319	0197	-7460158	0090	-3236631	7039	304 18 52.6	49.4	-0.04	932420	
24.5	5622573	1449	-7415165	5101	-3217107	7484	304 49 22.0	18.7	+0.03	932688	
25.0	5694394	4263	-7369597	9537	-3197333	7708	305 19 51.2	47.8	0.10	932962	
25.5	5765778	5650	-7323437	3401	-3177312	7686	305 50 20.3	16.9	0.17	933241	
26.0	+5836719	6589	-7276748	6696	-3157044	7416	306 20 49.3	45.8	+0.23	933526	
26.5	5907212	7080	-7229473	9425	-3136531	6902	306 51 18.1	14.6	0.29	933817	
27.0	5977250	7116	-7181637	1592	-3115774	6144	307 21 46.7	43.1	0.35	934114	
27.5	6046828	6602	-7133242	3201	-3094775	5144	307 52 15.1	11.5	0.40	934416	
28.0	6115942	5805	-7084232	4255	-3073537	3905	308 22 43.4	39.7	0.45	934722	
28.5	+6184585	4446	-7034791	4758	-3052060	2427	308 53 11.5	7.7	+0.49	935033	
29.0	6252752	2612	-6984742	4713	-3030346	0712	309 23 39.4	35.5	0.52	935348	
29.5	6320438	0296	-6934150	4125	-3008306	8761	309 54 7.1	3.1	0.54	935668	
30.0	6387637	7494	-6883019	2998	-2986212	6576	310 24 34.6	30.5	0.56	935982	
30.5	6454343	4198	-6831352	1335	-2963796	4159	310 54 61.9	57.8	0.57	936320	
31.0	+6520551	0405	-6779153	9140	-2941149	1510	311 25 29.1	24.9	+0.58	936652	

Note.—The accented letters correspond to the mean equinox and equator of January 0d.0.

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
Jan. 31.5	+6586256	6108	-6726426	6417	-2018273	8633	311 55 56.1	51.9	+0.58	936388	
Feb. 1.0	6651452	1333	6673175	3170	2895170	5528	312 26 22.8	18.5	0.57	937323	
1.5	6716134	5984	6619405	9404	2871842	2219	312 56 49.3	45.0	0.55	937671	
2.0	6780296	0145	6565120	5123	2848211	6646	313 27 15.5	11.1	0.53	938018	
2.5	6843933	3781	6510325	0332	2824520	4874	313 57 41.4	37.0	0.50	938368	
3.0	+6907039	6886	-6455024	5035	-2800529	0881	314 28 7.1	2.6	+0.46	938721	
3.5	6969609	9455	6398221	9236	2776322	6673	314 58 32.5	27.9	0.41	939077	
4.0	7031637	1482	6342222	2942	2751809	2248	315 28 57.6	52.9	0.36	939436	
4.5	7093118	2062	6286132	6156	2727263	7611	315 59 22.3	17.6	0.31	939798	
5.0	7154048	3891	6228855	8884	2702417	2763	316 29 46.6	41.8	0.25	940163	
5.5	+7214422	4284	-6171097	1130	-2677362	7707	317 0 10.6	5.8	+0.19	940531	
6.0	7274236	4377	6112362	2000	2652100	2443	317 30 34.3	29.4	0.13	940892	
6.5	7333485	3325	6054155	4187	2626633	6374	318 0 57.7	52.8	+0.07	941277	
7.0	7392166	2306	5994981	5028	2600863	1362	318 31 20.7	15.7	0.00	941655	
7.5	7453275	0114	5935344	5395	2575092	5430	319 1 43.3	38.2	-0.07	942036	
8.0	+7507807	7646	-5875250	5306	-2549024	9360	319 32 5.5	0.3	-0.14	942421	
8.5	7564758	4597	5814704	4764	2522759	3094	320 2 27.3	22.1	0.20	942809	
9.0	7621124	0963	5753712	3777	2496301	6634	320 32 48.8	43.5	0.26	943211	
9.5	7676900	6739	5692278	2347	2469651	9982	321 3 9.9	4.6	0.31	943596	
10.0	7732381	1920	5630408	0482	2442812	3141	321 33 30.6	25.2	0.37	943995	
10.5	+7786664	6503	-5568108	8186	-2415785	6113	322 3 50.9	45.5	-0.41	944398	
11.0	7841645	0484	5505382	5465	2388574	8900	322 34 10.7	5.2	0.45	944805	
11.5	7894021	3969	5442237	2324	2361179	1504	323 4 30.1	24.6	0.48	945216	
12.0	7946787	6627	5378677	8768	2333605	3928	323 34 49.1	43.5	0.51	945631	
12.5	7998941	8781	5314707	4892	2305853	6174	324 5 7.6	2.0	0.52	946050	
13.0	+8050480	0321	-5250333	0433	-2277925	8244	324 35 25.7	20.0	-0.53	946474	
13.5	8101401	1242	5185561	5665	2249823	0141	325 5 43.4	37.7	0.53	946903	
14.0	8151699	1541	5120394	2503	2221550	1866	325 35 69.6	54.8	0.52	947336	
14.5	8201372	1215	5054838	4951	2193108	3423	326 6 17.4	11.6	0.51	947774	
15.0	8250416	0260	4988899	9017	2164499	4812	326 36 33.7	27.8	0.49	948216	
15.5	+8298829	8674	-4922581	2703	-2135725	6037	327 6 49.6	43.7	-0.46	948665	
16.0	8346605	6451	4855889	6316	2106790	7100	327 36 65.0	59.0	0.43	949117	
16.5	8393743	3590	4788820	8960	2077694	8003	328 7 20.0	14.0	0.39	949575	
17.0	8440242	0090	4721405	1541	2048440	8747	328 37 34.7	28.6	0.35	950039	
17.5	8486398	5947	4653623	3763	2019029	9334	329 7 49.0	42.9	0.30	950508	
18.0	+8531307	1157	-4585488	5633	-1989465	9768	329 37 62.8	56.6	-0.25	950982	
18.5	8575863	5719	4517004	7153	1959749	0050	330 8 16.2	10.0	0.19	951461	
19.0	8619778	9631	4448176	8330	1929883	0182	330 38 29.2	22.9	0.13	951945	
19.5	8663032	2886	4379009	9167	1899870	0167	331 8 41.8	35.5	-0.06	952434	
20.0	8705627	5482	4309508	9671	1869713	0008	331 38 54.0	47.6	+0.01	952928	
20.5	+8747561	7417	-4339678	9845	-1839414	9708	332 8 65.9	59.5	+0.08	953427	
21.0	8788829	8637	4168525	9607	1808975	9267	332 39 17.3	10.8	0.15	953931	
21.5	8829420	9288	4099053	9229	1778397	8687	333 9 28.4	21.9	0.22	954440	
22.0	8869361	9222	4028267	8448	1747683	7971	333 39 39.1	32.5	0.29	954953	
22.5	8908620	8487	3957173	7358	1716835	7122	334 9 49.5	42.9	0.35	955470	
23.0	+8947202	7066	-3885776	5966	-1685855	6140	334 39 59.5	52.8	+0.41	955991	
23.5	8985104	4969	3814081	4275	1654745	5028	335 10 9.1	2.4	0.47	956516	
24.0	9022224	2191	3742093	2292	1623509	3790	335 40 18.3	11.5	0.52	957045	
24.5	9058861	8729	3669818	0021	1592149	2428	336 10 27.2	20.4	0.56	957578	
25.0	9094711	4581	3597260	7468	1560666	0943	336 40 35.7	28.9	0.59	958115	
25.5	+9129869	9741	-3524423	4635	-1529063	9338	337 10 43.9	37.1	+0.61	958655	
26.0	9164334	4208	3451313	1530	1497342	7615	337 40 51.7	44.8	0.63	959198	
26.5	9198105	7981	3377936	8157	1465506	5777	338 10 59.1	52.2	0.64	959744	
27.0	9231176	1054	3304298	4524	1433559	3828	338 40 66.1	59.1	0.65	960292	
27.5	9263545	3425	3230404	0634	1401501	1768	339 11 12.8	5.8	0.65	960843	
28.0	+9295210	5092	-3156260	6494	-1369335	9599	339 41 19.1	12.0	+0.64	961396	
28.5	9326160	6053	3081873	2111	1337064	7326	340 11 25.0	17.9	0.62	961952	
Mar. 1.0	9356419	6305	3007248	7490	1304690	4950	340 41 30.5	23.3	0.60	962509	
1.5	9385957	5845	2932392	2638	1272216	2474	341 11 35.6	28.4	0.57	963068	
2.0	9414781	4671	2857310	7560	1239644	9899	341 41 40.3	33.0	0.53	963629	
2.5	+9442889	2781	-2782008	2262	-1206977	7230	342 11 44.6	37.3	+0.49	964191	

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	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Mar. 3.0	+9470276	0171	—2706494	6753	—1174217	4468	342° 41' 48.4"	41.0	+0.44	964755
3.5	9496142	6839	2630774	1037	1141367	1616	343 11 51.8	44.4	0.39	965320
4.0	9522386	2786	2554852	5119	1108430	8677	343 41 54.8	47.3	0.33	965886
4.5	9548105	8107	2478734	9005	1075409	5654	344 11 57.3	49.8	0.27	966453
5.0	9572398	2503	2402427	2702	1042306	2549	344 41 59.4	51.8	0.21	967021
5.5	+9596363	6270	—2325937	6216	—1009123	9364	345 11 61.0	53.4	+0.14	967590
6.0	9619398	9308	2249271	9554	0975863	6102	345 41 62.2	54.5	+0.07	968159
6.5	9641702	1614	2172435	2722	0942529	2766	346 11 62.9	55.2	0.00	968729
7.0	9661274	3189	2095434	5725	0909126	9360	346 41 63.1	55.3	—0.06	969300
7.5	9684112	4029	2018275	8570	0875654	5886	347 11 62.7	54.9	0.12	969871
8.0	+9704214	4134	—1940965	1264	—0842116	2345	347 41 61.8	53.9	—0.19	970444
8.5	9723579	3502	1863509	3812	0808514	8741	348 11 60.4	52.5	0.25	971017
9.0	9742214	2130	1785914	6221	0774852	5676	348 41 58.4	50.4	0.30	971592
9.5	9761091	0020	1708186	8497	0741131	1353	349 11 55.9	47.9	0.34	972167
10.0	9777238	7170	1630332	0646	0707356	7575	349 41 52.9	44.8	0.38	972744
10.5	+9793645	3580	—1552358	2676	—0673528	3745	350 11 49.4	41.3	—0.42	973321
11.0	9810311	9249	1474270	4592	0639650	9864	350 41 45.3	37.2	0.45	973899
11.5	9824237	4178	1386975	6401	0605725	5937	351 11 40.6	32.5	0.47	974478
12.0	9838421	8365	1317778	8107	0571756	1965	351 41 35.4	27.2	0.49	975059
12.5	9851865	1812	1239386	9719	0537745	7952	352 11 29.6	21.4	0.50	975641
13.0	+9864567	4517	—1160905	1242	—0503696	3900	352 41 23.2	14.9	—0.50	976225
13.5	9876528	6481	1082341	2682	0468610	9812	353 11 16.2	7.9	0.49	976811
14.0	9887746	7702	1003700	4044	0435490	5689	353 41 8.7	0.3	0.47	977399
14.5	9898222	8181	0924987	5335	0401338	1535	354 10 60.7	52.3	0.45	977989
15.0	9907956	7919	0846239	6560	0367158	7352	354 40 52.0	43.5	0.42	978581
15.5	+9916948	6914	—0767370	7725	—0332951	3143	355 10 42.8	34.3	—0.38	979175
16.0	9925197	5166	0688477	8835	0298720	8909	355 40 33.0	24.5	0.33	979772
16.5	9932704	2676	0609535	9897	0264467	4654	356 10 22.7	14.2	0.28	980371
17.0	9939467	9445	0530550	0915	0230196	0380	356 40 11.8	3.2	0.23	980972
17.5	9945492	5471	0451528	1807	0195909	6091	357 9 60.4	51.8	0.18	981576
18.0	+9950773	0756	—0372475	2847	—0161608	1787	357 39 48.4	39.7	—0.12	982182
18.5	9955313	5219	0293395	3771	0127285	7472	358 9 35.9	29.2	—0.06	982790
19.0	9959111	9101	0214294	4673	0092973	3147	358 39 22.9	14.1	+0.01	983401
19.5	9962168	2161	0135178	5561	0058644	8816	359 9 9.3	0.5	0.09	984015
2.0	9964484	4481	—0056052	6437	—0024311	4480	359 38 55.3	46.4	0.16	984631
20.5	+9966959	6059	+0023079	2691	+0010025	9858	0 8 40.7	31.8	+0.23	985249
21.0	9966394	6398	0102207	1816	0044359	4195	0 38 25.7	16.8	0.29	985870
21.5	9966383	6395	0181330	0936	0078691	8529	1 8 10.1	1.2	0.35	986493
22.0	9966342	6353	0263440	0043	0113017	2858	1 57 54.1	45.1	0.41	987119
22.5	9964956	4971	0339533	9132	0147335	7178	2 7 37.6	28.6	0.47	987747
23.0	+9962330	2849	+0418604	8200	+0181643	1490	2 37 20.7	11.6	+0.52	988378
23.5	9959264	9986	0497646	7239	0215939	5788	3 6 63.3	54.2	0.56	989011
24.0	9956359	6385	0576653	6643	0250218	0070	3 36 45.4	36.2	0.60	989645
24.5	9952014	2044	0655620	5207	0284480	4335	4 6 27.0	17.8	0.63	990280
25.0	9946930	6964	0734542	4126	0318722	8580	4 35 68.2	58.9	0.66	990917
25.5	+9941107	1145	+0813413	2094	+0352942	2802	5 5 48.9	39.6	+0.68	991555
26.0	9934346	4588	0892227	1805	0387137	7000	5 35 29.2	19.9	0.69	992194
26.5	9927246	7292	0970977	0552	0421305	1170	6 4 69.1	59.8	0.69	992834
27.0	9919208	9258	1049659	9231	0455442	5310	6 34 48.5	39.1	0.69	993474
27.5	9910432	0486	1128266	7835	0489547	9417	7 4 27.5	18.1	0.67	994115
28.0	+9900921	0979	+1206792	6358	+0523615	3488	7 33 66.0	56.5	+0.65	994755
28.5	9890672	0734	1285233	4796	0557646	7522	8 3 44.0	34.5	0.62	995396
29.0	9879639	9756	1363582	3142	0591636	1515	8 33 21.6	12.0	0.59	996036
29.5	9867971	8042	1441834	1391	0625584	5465	9 2 58.8	49.2	0.55	996676
30.0	9855518	5593	1519983	9538	0659487	9371	9 32 35.5	25.8	0.50	997316
30.5	+9842332	2411	+1598022	7574	+0693342	3229	10 2 11.8	2.1	+0.45	997956
31.0	9828413	8497	1675946	5496	0727146	7036	10 31 47.6	37.9	0.40	998594
31.5	9813763	3851	1753748	3295	0761898	0791	11 1 23.0	13.3	0.34	999231
Apr. 1.0	9798384	8477	1831422	0967	0794594	4490	11 30 57.9	48.1	0.28	999866
1.5	9782276	2373	1908961	8508	0828233	8131	12 0 32.4	22.6	0.22	100500
2.0	+9765441	5543	+1986369	5900	+0861809	1710	12 29 66.3	56.4	+0.15	001133

☉ The first figures of this and the following logarithms are 0.0.

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = p.	
Apr. 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0	+9747879	7985	+2063613	3150	+0895322	5226	12 59 39.8	29.9	+0.08	001764	
	9729594	9705	2140713	0248	0928769	8676	13 29 12.8	2.8	+0.01	002313	
	9710586	0701	2217654	7186	0962148	2057	13 58 45.3	35.3	-0.05	003021	
	9690855	0975	2294430	3960	0995455	5367	14 28 17.3	7.2	0.11	003646	
	9670406	0530	2371037	0565	1028688	8603	14 57 48.7	38.6	0.17	004270	
	+9649240	9363	+2447468	6994	+1061844	1762	15 27 19.6	9.5	-0.22	004891	
	9627359	7492	2523716	3240	1094922	4843	15 56 50.0	39.9	0.26	005510	
	9604766	4904	2599775	9207	1127918	7842	16 26 19.9	9.7	0.31	006127	
	9581462	1694	2675640	5160	1160830	0757	16 55 49.2	39.0	0.35	006742	
	9557449	7595	2751305	0823	1193656	3586	17 25 17.9	7.6	0.38	007355	
	+9532730	2881	+2826764	6290	+1226394	6327	17 54 46.1	35.8	-0.40	007966	
	9507309	7465	2902312	1526	1259040	8976	18 24 13.7	3.3	0.42	008577	
	9481187	1348	2977043	6555	1291593	1532	18 53 40.8	30.4	0.43	009186	
	9454367	4533	3051851	1361	1324049	3991	19 22 67.3	56.8	0.44	009793	
	9426352	7023	3126431	5939	1356407	6352	19 52 33.3	22.8	0.43	010398	
	10.0 10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5	+9398645	8821	+3200778	0284	+1388664	8612	20 21 58.7	48.2	-0.42	011001
9367749		9930	3274887	4391	1420818	0769	20 51 23.5	13.0	0.39	011604	
9340166		0352	3348751	8253	1452865	2829	21 20 47.8	37.2	0.36	012205	
9309899		0090	3422366	1866	1484805	4763	21 50 11.5	0.9	0.53	012805	
9278951		9147	3495727	5225	1516635	6596	22 19 34.6	23.9	0.29	013404	
+9247325		7526	+3563828	8324	+1548353	8317	22 48 57.2	46.5	-0.24	014002	
9215024		5230	3641664	1158	1579056	9924	23 18 19.2	8.4	0.19	014600	
9182351		2262	3714231	3723	1611443	1414	23 47 40.6	29.8	0.13	015197	
9148409		8626	3786524	6014	1642810	2784	24 16 61.4	50.5	-0.07	015793	
9114102		4324	3858538	8026	1674056	4033	24 46 21.7	10.8	0.00	016389	
+9079131		9358	+3930267	9753	+1705179	5159	25 15 41.5	30.5	+0.06	016984	
9043501		3733	4001706	1190	1736177	6169	25 44 60.8	49.8	0.12	017579	
9007213		7451	4072351	2334	1767047	7034	26 14 19.5	8.4	0.19	018173	
8970272		0515	4143630	3180	1797789	7779	26 43 37.6	26.5	0.26	018767	
8932680		2928	4214245	3725	1828400	8394	27 12 55.1	43.9	0.33	019361	
17.5 18.0 18.5 19.0 19.5 20.0 20.5 21.0 21.5 22.0		+8894439	4692	+4284484	3962	+1858877	8874	27 42 12.2	1.0	+0.39	019955
	8865552	5811	4354412	3889	1889218	9219	28 11 28.8	17.5	0.45	020549	
	8816023	6287	4424024	3500	1919422	9426	28 40 45.0	33.7	0.50	021143	
	8775355	6125	4493316	2791	1949488	9456	29 9 60.7	49.3	0.55	021736	
	8735051	5326	4562824	1758	1979413	9424	29 39 15.9	4.5	0.60	022329	
	+8693613	3894	+4630923	0396	+2009194	9208	30 8 30.7	19.2	+0.64	022922	
	8651545	1831	4699227	8609	2038830	8247	30 37 45.0	33.5	0.68	023515	
	8608851	9142	4767192	6663	2068319	8340	31 6 58.9	47.3	0.71	024107	
	8565531	5829	4834813	4283	2097659	7683	31 36 12.3	0.7	0.73	024698	
	8521590	1894	4902086	1555	2126847	6875	32 5 25.3	13.6	0.74	025289	
	+8477031	7340	+4969007	8475	+2155881	5012	32 34 37.9	26.2	+0.74	025879	
	8431857	2172	5035571	5038	2184759	4794	33 3 50.1	38.3	0.74	026468	
	8386071	6392	5101772	1238	2213481	3519	33 32 61.9	50.1	0.73	027056	
	8330675	0002	5167637	7072	2242043	2084	34 2 13.3	1.4	0.72	027642	
	8292674	3007	5233072	2536	2270444	0488	34 31 24.2	12.3	0.69	028227	
	25.0 25.5 26.0 26.5 27.0 27.5 28.0 28.5 29.0 29.5	+8245070	5408	+5298161	7624	+2298681	8728	35 0 34.7	22.7	+0.66	028810
8196366		7210	5362869	2331	2326753	6803	35 29 44.9	32.9	0.63	029391	
8143065		8415	5427192	6653	2354657	4710	35 58 54.7	42.6	0.59	029970	
8098671		9026	5491124	0584	2382301	2447	36 27 64.2	52.1	0.54	030546	
8048688		9049	5554669	4120	2409954	0014	36 57 13.3	1.1	0.48	031120	
+7908119		8486	+5617796	7255	+2437343	7406	37 26 21.9	9.7	+0.42	031691	
7946968		7341	5680527	9086	2464556	4622	37 55 30.1	17.8	0.36	032260	
7895238		5616	5742848	2306	2491591	1660	38 24 38.0	25.7	0.30	032825	
7842933		3317	5804755	4213	2518446	8519	38 53 45.5	33.1	0.23	033387	
7790056		0445	5866244	5701	2545120	5196	39 22 52.6	40.2	0.16	033945	
+7736613		7008	+5927310	6767	+2571609	1688	39 51 59.3	46.8	+0.10	034499	
7692608		3008	5987948	7405	2597913	7995	40 20 65.6	53.1	+0.04	035049	
7628045		8451	6048153	7610	2624029	4114	40 49 71.6	59.0	-0.02	035596	
7572926		3338	6107921	7378	2649956	0044	41 19 17.2	4.6	0.08	036139	
7517257		7675	6167246	6703	2675691	5783	41 48 22.4	9.7	0.14	036677	
7461042		1465	+6226124	5581	+2701233	1329	42 17 27.1	14.4	-0.19	037211	
May 1.0											

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
May 3.0	+7404286	4715	+6284552	4009	+2726579	6679	42 46 31.4	18.6	-0.24	0.0 037741	
	7346993	5427	6342524	1981	2751728	1831	43 15 35.3	22.5	0.28	039267	
	7289168	9608	6400035	9492	2776678	6785	43 44 38.8	25.9	0.32	038788	
	7230815	1260	6457082	6539	2801426	1536	44 13 41.8	28.8	0.35	039305	
	7171939	2390	6513661	3118	2825972	6086	44 42 44.4	31.3	0.37	039817	
	5.5	+7112545	3002	+6569767	9224	+2850313	0431	45 11 46.5	33.4	-0.38	040325
	6.0	7052638	3101	6625396	4853	2874447	4569	45 40 48.2	35.0	0.39	040828
	6.5	6992223	2691	6680545	0002	2898374	8499	46 9 49.4	36.2	0.38	041327
	7.0	6931304	1778	6735210	4668	2922091	2220	46 38 50.2	36.9	0.37	041822
	7.5	6869887	0367	6789387	8845	2945597	5729	47 7 50.6	37.3	0.35	042313
8.0	+6807977	8463	+6843078	2532	+2968890	9026	47 36 50.5	37.1	-0.33	042799	
	6745580	6072	6896264	5724	2991969	2108	48 5 50.0	36.5	0.30	043282	
	6682699	3197	6948956	8417	3014831	4974	48 34 49.0	35.4	0.26	043761	
	6619342	9846	7001146	0608	3037476	7622	49 3 47.5	33.8	0.22	044236	
	6555512	6022	7052831	2204	3059902	0052	49 32 45.6	31.8	0.17	044707	
	10.5	+6491215	1731	+7104007	3471	+3082108	2261	50 1 43.2	29.4	-0.11	045175
	11.0	6426455	6977	7154671	4137	3104092	4249	50 30 40.4	26.5	-0.05	045639
	11.5	6361238	1766	7204820	4287	3125853	6013	50 59 37.1	23.2	+0.01	046100
	12.0	6295567	6101	7254451	3920	3147389	7553	51 28 33.4	19.4	0.07	046558
	12.5	6229449	9989	7303561	3031	3168699	8867	51 57 29.2	15.2	0.14	047013
13.0	+6162887	3433	+7352147	1619	+3189782	9854	52 26 24.6	10.5	+0.21	047465	
	6095889	6441	7400206	9679	3210636	0811	52 55 19.6	5.5	0.28	047914	
	6028457	9016	7447735	7210	3231260	1439	53 23 74.1	50.9	0.34	048360	
	5960598	1163	7494731	4207	3251652	1835	53 52 68.3	54.0	0.41	048804	
	5892318	2889	7541192	0670	3271812	1999	54 21 62.0	47.6	0.47	049245	
	15.5	+5822620	4197	+7587115	6594	+3291738	1928	54 50 55.3	40.9	+0.53	049684
	16.0	5754511	5095	7632496	1977	3311429	1623	55 19 48.2	33.7	0.59	050120
	16.5	5684993	5583	7677334	6816	3330884	1082	55 48 40.7	26.2	0.63	050554
	17.0	5615072	5669	7721625	1109	3350101	0303	56 17 32.9	18.3	0.67	050986
	17.5	5544755	5358	7765368	4853	3369080	9285	56 46 24.7	10.1	0.71	051415
18.0	+5474045	4655	+7808559	8046	+3387821	8030	57 15 16.1	1.4	+0.74	051842	
	5402944	3560	7851197	0685	3406322	6535	57 43 67.3	52.5	0.76	052267	
	5331461	2084	7893278	2768	3424581	4795	58 12 58.1	43.2	0.78	052689	
	5259598	0928	7934800	4291	3442596	2817	58 41 48.5	33.5	0.79	053110	
	5187361	7998	7975763	5256	3460367	0592	59 10 38.6	23.5	0.79	053528	
	20.5	+5114754	5398	+8016161	5655	+3477803	8122	59 39 28.4	13.3	+0.78	053943
	21.0	5041783	2433	8055990	5486	3495172	5404	60 8 18.0	2.8	0.76	054356
	21.5	4968452	9108	8095249	4747	3512202	2437	60 36 67.3	52.0	0.74	054766
	22.0	4894766	5428	8133935	3436	3528963	9221	61 5 56.4	41.1	0.71	055173
	22.5	4820730	1399	8172045	1548	3545514	5755	61 34 45.2	29.9	0.67	055577
23.0	+4746350	7025	+8209576	9082	+3561795	2040	62 3 33.7	18.3	+0.63	055978	
	4671630	2311	8246526	6034	3577823	8071	62 32 22.0	6.5	0.59	056376	
	4596575	7262	8282812	2403	3593598	3850	63 0 70.0	54.4	0.54	056770	
	4521190	1833	8318673	8187	3609118	9373	63 29 57.8	42.1	0.48	057160	
	4445480	6179	8353863	3380	3624382	4641	63 58 45.4	29.6	0.42	057546	
	25.5	+4369450	0155	+8388462	7982	+3639389	9651	64 27 32.7	16.9	+0.36	057928
	26.0	4293106	3817	8422465	1989	3654138	4404	64 56 19.8	3.9	0.29	058306
	26.5	4216454	7171	8455871	5398	3668628	8897	65 24 66.7	50.8	0.23	058679
	27.0	4139498	0921	8488677	8208	3682857	3130	65 53 53.4	37.4	0.16	059048
	27.5	4062244	2973	8520881	0415	3696825	7098	66 22 30.9	23.8	0.10	059412
28.0	+3984698	5433	+8552480	2018	+3710531	0811	66 51 26.2	10.0	+0.03	059771	
	3906365	7606	8583472	3013	3723974	4257	67 19 72.2	55.9	-0.03	060125	
	3828750	9497	8613852	3397	3737152	7439	67 48 58.0	41.6	0.09	060474	
	3750360	1113	8643620	3168	3750064	0354	68 17 43.6	27.1	0.14	060818	
	3671700	2458	8672772	2394	3762709	3003	68 46 29.0	12.4	0.19	061156	
	30.5	+3592776	3540	+8701309	0865	+3775087	5384	69 14 74.2	57.6	-0.23	061489
	31.0	3513504	4363	8720927	8787	3787196	7497	69 43 59.2	42.5	0.27	061816
	31.5	3434160	4935	8756521	6085	3799035	9340	70 12 43.9	27.2	0.30	062136
	June 1.0	3354481	5261	8783191	2759	3810604	0913	70 41 28.4	11.6	0.32	062450
		3274562	5348	8809235	8807	3821902	2214	71 9 72.7	55.9	0.34	062759
+3194409		5200	+8834651	4228	+3832928	3244	71 38 56.7	39.8	-0.35	063061	

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
June	2.5	+3114029	4826	+8859437	9018	+3843681	4001	72° 7' 40.5	23.5	-0.35	063357
	3.0	3033428	4230	8883591	3177	3854160	4484	72 36 24.0	6.9	0.34	062647
	3.5	2952613	3421	8907112	6702	3864365	4692	73 4 67.3	50.1	0.32	061931
	4.0	2871589	2402	8929099	9594	3874296	4627	73 33 50.3	33.0	0.29	064201
	4.5	2790363	1182	8952250	1849	3883951	4285	74 2 33.1	15.8	0.26	064482
	5.0	+2708940	9764	+8973865	3460	+3893330	3668	74 30 75.6	58.2	-0.23	064748
	5.5	2627327	8157	8994842	4451	3902433	2774	74 59 57.8	40.4	0.19	065009
	6.0	2545530	6365	9015179	4793	3911258	1602	75 28 39.8	22.3	0.14	065264
	6.5	2463556	4407	9034875	4594	3919806	0153	75 57 21.5	3.9	0.09	065513
	7.0	2381410	2256	9053929	3554	3928076	8427	76 25 63.0	45.3	-0.03	065757
	7.5	+2299099	9951	+9072341	1971	+3936068	6122	76 54 44.2	26.4	+0.03	065996
	8.0	2216629	7486	9090111	9747	3943780	4137	77 23 25.1	7.2	0.00	066229
	8.5	2134006	4869	9107237	6878	3951213	1573	77 51 65.8	47.8	0.15	066458
	9.0	2051236	2104	9123717	3364	3958366	8730	78 20 46.2	28.1	0.22	066681
	9.5	1968325	9199	9139551	9203	3965239	5606	78 49 26.4	8.3	0.29	066899
	10.0	+1885279	6158	+9154739	4397	+3971832	2202	79 17 66.3	48.1	+0.36	067113
	10.5	1802104	2988	9169280	8943	3978144	8517	79 46 46.0	27.8	0.42	067322
	11.0	1718805	9694	9183173	2842	3984175	4552	80 15 25.4	7.1	0.48	067527
	11.5	1635389	6283	9196419	6093	3989925	0306	80 43 64.6	46.2	0.54	067728
	12.0	1551861	2760	9209017	8697	3995394	5779	81 12 43.5	25.0	0.59	067924
12.5	+1468227	9131	+9220967	0653	+4000581	0969	81 41 22.2	3.6	+0.64	068116	
13.0	1384493	5402	9232268	1960	4005486	5878	82 9 60.7	42.0	0.69	068304	
13.5	1300664	1578	9242921	2619	4010110	0506	82 38 39.0	20.2	0.73	068489	
14.0	1216746	7665	9252924	2628	4014451	4851	83 6 77.1	58.2	0.76	068670	
14.5	1132744	3663	9263278	1988	4018510	8913	83 35 55.0	36.1	0.78	068847	
15.0	+1048665	9594	+9270982	0698	+4022287	2694	84 4 32.8	13.8	+0.80	069020	
15.5	0964513	5447	9279036	8758	4025781	6191	84 32 70.4	51.3	0.80	069192	
16.0	0880294	1233	9286439	6168	4028993	9406	85 1 47.9	28.7	0.80	069378	
16.5	0796013	6957	9293191	2026	4031922	2355	85 30 25.2	5.9	0.80	069552	
17.0	0711677	2626	9299290	9033	4034568	4988	85 58 62.4	43.0	0.79	069682	
17.5	+0627291	8245	+9304738	4486	+4036931	7354	86 27 39.5	20.0	+0.77	069839	
18.0	0542859	3818	9309534	9289	4039011	9438	86 55 76.5	56.9	0.74	069992	
18.5	0458388	9352	9313678	3440	4040807	1237	87 24 53.4	33.7	0.71	070142	
19.0	0373383	4851	9317169	6938	4042320	2754	87 53 30.2	10.4	0.67	070287	
19.5	0289349	0322	9320007	9783	4043549	3986	88 21 66.9	47.1	0.62	070429	
20.0	+0204794	5771	+9322191	1974	+4044494	4934	88 50 43.6	23.7	+0.57	070567	
20.5	0120222	1204	9323721	3501	4045155	5598	89 19 20.2	0.3	0.52	070702	
21.0	+0035638	6624	+9324597	4395	+4045532	5978	89 47 56.8	36.8	0.46	070822	
21.5	-0048952	7961	9324819	4624	4045624	6073	90 16 33.3	13.2	0.39	070958	
22.0	0133542	2547	9324385	4198	4045432	5884	90 44 69.8	49.6	0.33	071080	
22.5	-0218126	7127	+9323296	3118	+4044956	5411	91 13 46.3	26.0	+0.27	071199	
23.0	0302699	1696	9321552	1380	4044196	4654	91 42 22.8	2.4	0.20	071310	
23.5	0387255	6248	9319152	8988	4043151	3612	92 10 59.3	38.8	0.13	071418	
24.0	0471788	0777	9316906	5940	4041821	2285	92 39 35.8	15.2	+0.06	071521	
24.5	0556292	5277	9312383	2235	4040207	0674	93 7 72.3	51.7	0.00	071619	
25.0	-0640760	9742	+9308013	7874	+4038308	8777	93 36 48.8	28.1	-0.06	071712	
25.5	0725187	4165	9302886	2856	4036124	6596	94 5 25.3	4.6	0.12	071800	
26.0	0809566	8541	9297302	7180	4033656	4131	94 33 61.8	41.0	0.17	071882	
26.5	0893891	2862	9290961	0847	4030903	1381	95 2 38.3	17.4	0.22	071957	
27.0	0978156	7124	9283965	3860	4027866	8347	95 30 74.8	53.8	0.26	072026	
27.5	-1062354	1318	+9276313	6216	+4024544	5028	95 59 51.3	30.2	-0.29	072090	
28.0	1146480	5441	9268005	7917	4020939	1427	96 28 27.8	6.6	0.32	072147	
28.5	1230528	9486	9259043	8964	4017049	7540	96 56 64.3	43.0	0.34	072198	
29.0	1314491	3446	9249425	9355	4012875	3369	97 25 40.9	19.5	0.35	072244	
29.5	1398362	7314	9239153	9092	4008417	8914	97 53 77.4	56.0	0.35	072283	
30.0	-1482136	1086	+9228226	8174	+4003676	4177	98 22 53.9	32.4	-0.35	072315	
30.5	1565807	4754	9216645	6602	3998652	9156	98 51 30.4	8.9	0.34	072340	
July 1.0	1649367	8312	9204412	4379	3993346	3853	99 19 67.0	45.4	0.32	072359	
1.5	1732811	1753	9191527	1503	3987757	8267	99 48 43.5	21.8	0.29	072371	
2.0	1816133	5073	9177991	7977	3981886	2399	100 16 80.1	58.3	0.26	072377	
2.5	-1899326	8264	+9163806	3801	+3975734	6250	100 45 56.6	34.7	-0.23	072376	

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	
July 3.0	—1982384	1320	+9148373	8978	+3969301	9820	101 14 33.1	11.1	—0.19	0.0	
3.5	2065300	4234	.9133492	3506	.3962588	3109	101 42 69.6	47.5	0.14	072369	
4.0	2148068	7001	.9117365	7389	.3955595	6119	102 11 46.1	23.9	0.09	072354	
4.5	2230680	9611	.9100594	0628	.3948322	8849	102 40 22.5	0.3	—0.03	072334	
5.0	2313131	2061	.9083179	3223	.3940771	1301	103 8 58.9	36.6	+0.03	072307	
5.5	—2395416	4344	+9065123	5176	+3932941	3474	103 37 35.2	12.9	+0.09	072273	
6.0	2477529	6456	.9046427	6490	.3924834	5370	104 5 71.5	49.1	0.16	072233	
6.5	2559464	8390	.9027093	7165	.3916450	6989	104 34 47.8	25.3	0.22	072188	
7.0	2641216	0141	.9007123	7205	.3907789	8331	105 3 24.0	1.4	0.29	072136	
7.5	2722778	1702	.8986518	6639	.3898853	9397	105 31 60.2	37.5	0.36	072079	
8.0	—2804144	3067	+8965281	5332	+3889643	0190	106 0 36.4	13.6	+0.42	072016	
8.5	2885308	4230	.8943414	3524	.3880159	0709	106 28 72.6	49.7	0.48	071948	
9.0	2966266	5188	.8920919	1039	.3870403	0956	106 57 48.8	25.8	0.53	071874	
9.5	3047011	5932	.8897797	7926	.3860374	0930	107 26 25.0	2.0	0.58	071795	
10.0	3127538	6459	.8874050	4189	.3850074	0633	107 54 61.2	38.1	0.63	071711	
10.5	—3207842	6763	+8849680	9828	+3839504	0065	108 23 37.3	14.2	+0.67	071529	
11.0	3287917	6338	.8824690	4848	.3829664	9228	108 51 73.4	50.2	0.71	071431	
11.5	3367758	6679	.8799081	9248	.3817555	8121	109 20 49.6	26.3	0.75	071328	
12.0	3447369	6281	.8772855	3032	.3806177	6746	109 49 25.7	2.3	0.76	071221	
12.5	3526718	5639	.8746014	6201	.3794532	5103	110 17 61.9	38.4	0.77	071110	
13.0	—3605825	4746	+8718561	8758	+3782622	3196	110 46 38.1	14.5	+0.77	070995	
13.5	3684677	3598	.8690498	0705	.3770447	1024	111 14 74.4	50.7	0.76	070877	
14.0	3763269	2190	.8661826	2143	.3758008	8588	111 43 50.8	27.0	0.74	070755	
14.5	3841595	0516	.8632548	2775	.3745304	5887	112 12 27.2	3.4	0.72	070629	
15.0	3919651	8573	.8602666	2903	.3732339	2924	112 40 63.6	39.7	0.70	070499	
15.5	—3997431	6353	+8572182	2429	+3719111	9698	113 9 40.2	16.3	+0.67	070366	
16.0	4074931	3854	.8541098	1356	.3705623	6213	113 37 76.8	52.8	0.63	070229	
16.5	4152146	1069	.8509416	9684	.3691876	2468	114 6 53.5	29.5	0.59	070089	
17.0	4229070	7994	.8477137	7416	.3677870	8464	114 35 30.4	6.3	0.54	069946	
17.5	4305639	4624	.8444264	4553	.3663606	4202	115 3 67.4	43.2	0.48	069800	
18.0	—4382028	0954	+8410790	1099	+3649084	9682	115 32 44.6	20.3	+0.42	069650	
18.5	4458051	6178	.8376743	7053	.3634306	4906	116 0 81.9	57.5	0.36	069497	
19.0	4533764	2642	.8342100	2421	.3619273	9775	116 29 59.4	34.9	0.30	069340	
19.5	4609161	8190	.8306870	7201	.3603986	4590	116 58 37.1	12.6	0.24	069179	
20.0	4684235	3166	.8271056	1398	.3588445	9051	117 26 74.9	50.3	0.17	069015	
20.5	—4758982	7914	+8234667	5012	+3572651	3259	117 55 52.9	28.3	+0.10	068847	
21.0	4833396	2330	.8197634	8047	.3556605	7216	118 24 31.1	6.4	+0.03	068675	
21.5	4907473	6408	.8161128	0502	.3540308	0921	118 52 69.5	44.8	—0.04	068498	
22.0	4981208	0145	.8121996	2381	.3523761	4377	119 21 48.1	23.3	0.10	068317	
22.5	5054595	3534	.8083239	3685	.3506965	7583	119 50 26.9	2.0	0.16	068131	
23.0	—5127629	6570	+8044011	4418	+3489922	0543	120 18 66.0	41.0	—0.21	067940	
23.5	5203016	9249	.8004163	4580	.3472632	3255	120 47 45.4	20.3	0.26	067744	
24.0	5272620	1165	.7963748	4176	.3455095	5721	121 15 85.0	59.8	0.31	067544	
24.5	5344565	3512	.7922768	3206	.3437314	7942	121 44 64.8	39.6	0.35	067339	
25.0	5416136	5086	.7881224	1673	.3419289	9919	122 13 44.8	19.5	0.38	067120	
25.5	—5487327	6279	+7839120	9579	+3401021	1653	122 41 85.1	59.8	—0.41	066914	
26.0	5558132	7087	.7796460	6930	.3382512	3146	123 10 65.7	40.3	0.43	066703	
26.5	5628546	7503	.7753245	3726	.3363763	4399	123 39 46.5	21.1	0.44	066496	
27.0	5698564	7524	.7709479	9971	.3344774	5412	124 8 27.6	2.1	0.44	066284	
27.5	5768179	7142	.7665164	5666	.3325548	6188	124 36 68.9	43.3	0.43	066066	
28.0	—5837386	6352	+7620304	0817	+3306086	6728	125 5 50.4	24.7	—0.41	065852	
28.5	5906180	5149	.7574902	5426	.3286389	7033	125 34 32.2	6.4	0.39	065647	
29.0	5974555	3527	.7528961	9496	.3266459	7105	126 2 74.2	48.3	0.36	065447	
29.5	6042507	1482	.7482483	3029	.3246297	6945	126 31 56.4	30.5	0.32	065247	
30.0	6110030	9009	.7435472	6028	.3225904	6553	127 0 38.9	12.9	0.28	065043	
30.5	—6177119	6101	+7387931	8498	+3205281	5931	127 28 81.6	55.6	—0.24	064843	
31.0	6243769	2755	.7339865	0443	.3184431	5083	127 57 64.5	38.4	0.19	064646	
31.5	6309974	8964	.7291977	1865	.3163355	4008	128 26 47.6	21.5	0.14	064458	
Aug. 1.0	6375729	4723	.7242170	2769	.3142053	2708	128 55 31.0	4.8	0.08	064264	
1.5	6441030	0928	.7192548	3158	.3020528	1184	129 23 74.6	48.3	—0.02	064080	
2.0	—6505870	4873	+7142414	3035	+3098781	9439	129 52 58.3	31.9	+0.04	063896	

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Aug. 2.5	—6570246	5253	+7091772	2403	+3076814	7473	130 21' 42.3	15.8	+0.10	062669
3.0	6634153	3165	7040627	1269	3054629	5289	130 50 26.5	0.0	0.17	062353
3.5	6697586	6602	6988982	9635	3032227	2888	131 18 70.9	44.3	0.23	062031
4.0	6760540	9561	6936841	7505	3009699	9271	131 47 55.5	28.8	0.30	061704
4.5	6823010	2036	6884209	4873	2986778	7440	132 16 40.3	13.6	0.36	061371
5.0	—6884992	4023	+6831089	1774	+2963735	4400	132 44 85.3	58.5	+0.42	061033
5.5	6946481	5517	6777486	8181	2940481	1147	133 13 70.5	43.7	0.48	06 6.30
6.0	7007474	6516	6723404	4110	2917020	7687	133 42 55.9	29.0	0.53	060342
6.5	7067966	7013	6668847	9563	2893352	4020	134 11 41.5	14.6	0.57	059989
7.0	7127953	7006	6613819	4546	2869480	9150	134 40 27.3	0.3	0.61	059632
7.5	—7187431	6490	+6558325	9055	+2845405	6076	135 8 73.3	46.2	+0.64	059270
8.0	7246397	5462	6502368	3115	2821129	1801	135 37 59.4	32.2	0.66	058905
8.5	7304846	3917	6445952	6702	2796654	7327	136 6 45.8	18.6	0.67	058535
9.0	7362774	1851	6389081	9848	2771981	2655	136 35 32.4	5.1	0.67	058162
9.5	7420177	9260	6331759	2536	2747112	7787	137 3 79.2	51.9	0.67	057785
10.0	—7477052	6142	+6273901	4778	+2722049	2725	137 32 66.3	38.9	+0.66	057404
10.5	7533985	2491	6215781	6678	2696794	7471	138 1 53.7	26.3	0.64	057020
11.0	7589213	8306	6157133	7940	2671349	2027	138 30 41.3	13.8	0.61	056633
11.5	7644472	3582	6098050	8267	2645715	6393	138 59 29.1	1.6	0.58	056243
12.0	7699198	8315	6038537	9364	2610893	0572	139 27 77.2	49.6	0.55	055851
12.5	—7753377	2501	+5978598	9435	+2593886	4565	139 56 65.5	37.8	+0.51	055456
13.0	7807006	6137	5918238	9085	2567696	8376	140 25 54.1	26.3	0.46	055068
13.5	7860081	9219	5857460	8317	2541323	2003	140 54 43.0	15.2	0.41	054657
14.0	7912599	1745	5796267	7133	2514771	5452	141 23 32.2	4.3	0.35	054254
14.5	7964556	3909	5734664	5540	2488040	8721	141 51 81.7	53.8	0.29	053848
15.0	—8015947	5108	+5672655	3541	+2461133	1815	142 20 71.6	43.6	+0.22	053440
15.5	8066769	5938	5610243	1139	2434051	4733	142 49 61.8	33.8	0.15	053029
16.0	8117019	6106	5547433	8338	2406797	7480	143 18 52.4	24.3	0.08	052616
16.5	8166694	5879	5484228	5143	2379372	9055	143 47 43.3	15.2	+0.01	052200
17.0	8215791	4984	5420633	1557	2351778	2462	144 16 34.5	6.3	—0.06	051782
17.5	—8264306	3507	+5356652	7586	+2324016	4700	144 44 86.1	57.9	—0.13	051361
18.0	8312234	1444	5292229	3232	2296089	6774	145 13 78.0	49.8	0.19	050939
18.5	8359573	8791	5227547	8500	2267997	8682	145 42 70.4	42.1	0.26	050513
19.0	8406319	5546	5162431	3393	2239743	9629	146 11 63.2	34.8	0.32	050085
19.5	8452463	1705	5096944	7915	2211328	2014	146 40 56.4	28.0	0.37	049655
20.0	—8498018	7263	+5031001	2061	+2182755	2442	147 9 50.0	21.5	—0.42	049221
20.5	8542964	2217	4964875	5854	2154025	4712	147 38 44.1	15.6	0.46	048784
21.0	8587301	6563	4898301	9299	2125140	5828	148 7 38.6	10.0	0.49	048354
21.5	8631027	9298	4831373	2380	2096102	6790	148 36 33.5	4.9	0.52	047901
22.0	8674136	3417	4764097	5112	2066013	7602	149 5 28.9	0.2	0.54	047454
22.5	—8716627	5917	+4696477	7501	+2037575	8264	149 33 84.7	56.0	—0.55	047003
23.0	8758494	7794	4626516	9548	2008990	8780	150 2 80.9	52.1	0.56	046549
23.5	8799736	9045	4561220	1261	1978460	9150	150 31 77.6	48.8	0.56	046091
24.0	8840347	9666	4491595	2644	1948677	9377	151 0 74.7	45.8	0.55	045629
24.5	8880326	9654	4422644	3702	1918773	9463	151 29 72.3	43.4	0.53	045163
25.0	—8919668	9006	+4353373	4438	+1888720	9409	151 50 70.3	41.3	—0.50	044693
25.5	8958370	7818	4283786	4869	1858530	9219	152 27 68.8	39.8	0.47	044219
26.0	8996427	5785	4213887	4968	1828206	8894	152 56 67.7	38.6	0.43	043741
26.5	9033836	3203	4143682	4772	1797750	8438	153 25 67.0	37.9	0.39	043258
27.0	9070595	9972	4073176	4374	1767164	7851	153 54 66.7	37.5	0.34	042771
27.5	—9106699	6086	+4002374	3480	+1736449	7136	154 23 66.9	37.7	—0.29	042280
28.0	9142145	1542	3931281	2395	1705608	6294	154 52 67.5	38.2	0.23	041784
28.5	9176931	6338	3859903	1025	1674643	5328	155 21 68.5	39.2	0.17	041282
29.0	9211053	0470	3788245	9375	1643557	4241	155 50 70.0	40.6	0.11	040776
29.5	9244510	3937	3716313	7451	1612352	3036	156 19 71.9	42.5	—0.05	040265
30.0	—9277298	6735	+3644113	5258	+1581031	1714	156 48 74.2	44.7	+0.02	039750
30.5	9309413	8860	3571649	2802	1549595	9278	157 17 76.9	47.4	0.09	039230
31.0	9340853	0310	3498927	9087	1518048	8730	157 46 80.0	50.4	0.15	038716
31.5	9371618	1085	3425953	7120	1486391	7073	158 15 83.5	53.9	0.21	038177
Sept. 1.0	9401702	1180	3352733	3907	1454627	5308	158 44 87.4	57.7	0.27	037645
1.5	—9431105	0594	+3279272	9453	+1422758	3438	159 14 31.6	1.9	+0.33	037109

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .	0.0
Sept. 2.0	-.9450824	9324	+3205576	6764	+1300788	1467	159 43 36.2	6.4	+0.38	035569	
2.5	.9487857	7368	.3131651	2846	.1358717	9386	160 12 41.2	11.4	0.42	036025	
3.0	.9515212	4724	.3057502	8704	.1326549	7227	160 41 46.6	16.7	0.46	035479	
3.5	.9541858	1390	.2983135	4344	.1294286	4963	161 10 52.4	22.5	0.48	034928	
4.0	.9567822	7365	.2908555	9771	.1261930	2606	161 39 58.5	28.5	0.50	034372	
4.5	-.9593093	2646	+2833763	4991	+1229484	50159	162 8 65.0	35.0	+0.52	033814	
5.0	.9617668	7232	.2758779	0008	.1196950	7624	162 37 71.8	41.7	0.53	033253	
5.5	.9641546	1121	.2683534	4830	.1164330	5003	163 6 79.0	48.9	0.53	032689	
6.0	.9667426	4312	.2608219	9461	.1131628	2300	163 35 86.6	56.4	0.53	032123	
6.5	.9693226	6903	.2532653	3908	.1098845	9516	164 5 34.6	4.4	0.52	031555	
7.0	-.9708093	8592	+2456920	8175	+1065984	6654	164 34 42.9	12.7	+0.50	030984	
7.5	.9733057	9677	.2381007	2269	.1033047	3716	165 3 51.7	21.5	0.47	030411	
8.0	.9758427	0059	.2304924	6112	.1000036	0703	165 32 60.8	30.5	0.43	029837	
8.5	.9779091	9734	.2228678	9952	.0966954	6620	166 1 70.3	40.0	0.39	029262	
9.0	.9799049	8704	.2152273	3552	.0933803	4467	166 30 80.2	49.8	0.35	028685	
9.5	-.9819209	6965	+2075715	7000	+0900585	1248	167 0 30.5	0.1	+0.30	028107	
10.0	.9844840	4518	.1999010	0300	.0867303	7964	167 29 41.3	10.8	0.24	027528	
10.5	.9861671	1361	.1922162	3458	.0833959	4619	167 58 52.5	22.0	0.18	026948	
11.0	.9877990	7492	.1845177	6478	.0800555	1213	168 27 64.1	33.5	0.12	026367	
11.5	.9893197	2911	.1768061	9367	.0767093	7749	168 56 76.2	45.6	+0.06	025785	
12.0	-.9887889	7615	+1690816	2128	+0733576	4230	169 25 88.7	58.1	-0.01	025202	
12.5	.9901866	1634	.1613451	4768	.0700007	0659	169 55 41.7	11.0	0.08	024618	
13.0	.9915127	4377	.1535970	7292	.0666388	7038	170 24 55.1	24.4	0.15	024035	
13.5	.9927670	7432	.1458378	9705	.0632720	3368	170 53 68.9	38.2	0.22	023451	
14.0	.9939495	9261	.1380681	2013	.0599007	9653	171 22 83.2	52.4	0.29	022867	
14.5	-.9950690	0396	+1302384	4221	+0565250	5804	171 52 38.0	7.2	-0.34	022282	
15.0	.9961984	0783	.1224992	6333	.0531453	2095	172 21 53.3	22.4	0.40	021697	
15.5	.9970645	0456	.1147009	8355	.0497617	8257	172 50 69.1	31.1	0.45	021111	
16.0	.9979533	9436	.1068941	0291	.0463744	4382	173 19 85.4	54.4	0.50	020525	
16.5	.9987797	7632	.0990794	2149	.0429837	50473	173 49 42.2	11.2	0.54	019939	
17.0	-.9995236	5134	+0912574	3933	+0395899	6533	174 16 59.5	23.5	-0.58	019353	
17.5	1.0002043	1908	.0834285	5648	.0361931	2563	174 46 77.3	46.3	0.61	018765	
18.0	1.0008082	7955	.0755932	7299	.0327936	8566	175 17 35.7	4.6	0.63	018177	
18.5	1.0013337	3273	.0677521	8892	.0293916	4544	175 46 54.6	23.5	0.64	017589	
19.0	1.0017963	7862	.0599058	0433	.0259873	50499	176 15 74.1	42.9	0.65	017000	
19.5	-1.0021838	1719	+0520549	1928	+0225810	6434	176 45 34.2	3.0	-0.65	016410	
20.0	1.0024922	4846	.0441997	3379	.0191730	2351	177 14 54.8	23.5	0.64	015819	
20.5	1.0027942	7239	.0363408	4794	.0157634	8253	177 43 76.0	44.7	0.63	015226	
21.0	1.0028947	8897	.0284787	6176	.0123525	4141	178 13 37.7	6.3	0.61	014632	
21.5	1.0029858	9821	.0206141	7534	.0080405	50019	178 42 60.0	28.6	0.58	014037	
22.0	-1.0030033	0009	+0127475	8871	+0055277	5888	179 11 82.9	51.5	-0.54	013440	
22.5	1.0029472	9461	.0048795	0194	+0021143	1752	179 41 46.4	15.0	0.50	012841	
23.0	1.0028173	8175	-.0029802	8490	-.0012904	2387	180 10 70.4	38.9	0.46	012241	
23.5	1.0026137	6152	.0108581	7176	.0047131	6526	180 40 35.0	3.5	0.40	012658	
24.0	1.0023362	3390	.0187264	5856	.0081265	6663	181 9 60.2	28.6	0.34	011034	
24.5	-1.0019849	9890	-.0265936	4525	-.0115393	4793	181 38 85.9	54.3	-0.28	010428	
25.0	1.0015506	5651	.0344591	3178	.0149514	8017	182 8 52.2	20.5	0.22	009820	
25.5	1.0010605	0673	.0423222	1806	.0183626	3032	182 37 79.0	47.3	0.15	009209	
26.0	1.0004873	4954	.0501824	0406	.0217726	7135	183 7 46.4	14.6	0.08	008597	
26.5	.9998401	8495	.0580391	8970	.0251810	1222	183 36 74.3	42.5	-0.02	007982	
27.0	-.9991189	1297	-.0658915	7492	-.0285875	5290	184 6 42.7	10.9	+0.04	007365	
27.5	.9983238	3359	.0737390	5965	.0319920	9338	184 35 71.6	39.8	0.10	006745	
28.0	.9974548	4683	.0815811	4384	.0353940	3361	185 5 41.0	9.1	0.16	006124	
28.5	.9965119	5267	.0894171	2742	.0387935	7359	185 34 70.9	30.0	0.21	005500	
29.0	.9954951	5113	.0972463	1032	.0421900	1327	186 4 41.3	9.3	0.26	004874	
29.5	-.9944045	4220	-.1050682	9249	-.0455833	5263	186 33 72.2	40.2	+0.31	004246	
30.0	.9932412	2591	.1128821	7386	.0489733	9167	187 3 43.6	11.5	0.35	003617	
30.5	.9920023	0225	.1206875	5438	.0523596	3033	187 32 75.5	43.4	0.39	002985	
Oct. 1.0	.9906910	7126	.1284839	3401	.0557419	6860	188 2 47.8	15.6	0.42	002352	
1.5	.9893062	3291	.1362706	1267	.0591200	0644	188 31 80.6	48.4	0.44	001718	
2.0	-.9878480	8723	-.1440469	9029	-.0624937	4385	189 1 53.9	21.7	+0.46	001082	

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Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.			
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = ρ .
Oct. 2.5	-.9863166	3423	-.1518122	6681	-.0658627	8078	189 30' 87.6"	55.4	+0.47	0.00445
3.0	.9847121	7391	.1595659	4217	.1612267	1722	190 0 61.8	29.5	0.47	0.00807
3.5	.9830345	0630	.1673076	1633	.0725855	5314	190 30 36.5	4.2	0.45	0.01167
4.0	.9812341	3139	.1750364	.9921	.0759388	8851	190 60 71.6	39.2	0.44	0.01528
4.5	.9794638	4321	.1827519	6075	.0792864	2330	191 29 47.2	14.8	0.42	0.01888
5.0	-.9775651	5978	-.1904534	3090	-.0826280	5750	191 58 83.1	50.6	+0.39	0.02248
5.5	.9755970	6311	.1981403	.9959	.0851633	9106	192 28 59.5	27.0	0.35	0.02607
6.0	.9735567	5922	.2058122	6678	.0882920	2397	192 58 36.3	3.7	0.36	0.02967
6.5	.9714444	4813	.2134685	3241	.0926140	5621	193 27 73.6	41.0	0.25	0.03327
7.0	.9692601	2083	.2211086	.9641	.0959290	8775	193 57 51.3	18.7	0.20	0.03688
7.5	-.9673041	0437	-.227319	5875	-.0992368	1857	194 26 89.5	56.9	+0.14	0.04050
8.0	.9646766	7176	.2363380	1936	.1025371	4864	194 56 68.1	35.4	0.08	0.04412
8.5	.9622777	3211	.2439264	7821	.1058298	7795	195 26 47.2	14.5	+0.02	0.04776
9.0	.9598077	8514	.2514964	3521	.1091144	0645	195 55 86.7	53.9	-0.65	0.05141
9.5	.9572666	3117	.2590475	.9033	.1123909	3414	196 25 66.7	33.9	0.12	0.05507
10.0	-.9546546	7010	-.2665791	4350	-.1156589	6098	196 55 47.2	14.3	-0.19	0.05876
10.5	.9519721	.0198	.2740907	.9467	.1189182	8695	197 24 88.1	55.2	0.26	0.06246
11.0	.9492190	2631	.2815818	4379	.1221686	1203	197 54 69.4	36.4	0.32	0.06618
11.5	.9463956	4461	.2890518	.9081	.1254099	3620	198 24 51.2	18.2	0.38	0.06992
12.0	.9435021	5543	.2965004	3567	.1286419	5945	198 54 33.5	0.5	0.44	0.07368
12.5	-.9405386	5019	-.3039270	7834	-.1318643	8173	199 23 76.4	43.4	-0.50	0.07746
13.0	.9375054	5630	.3113311	1876	.1350769	0304	199 53 50.8	26.7	0.55	0.08127
13.5	.9344325	4535	.3187121	5637	.1382794	2333	200 23 43.7	10.6	0.59	0.08510
14.0	.9312303	2876	.3260636	.9264	.1414717	4261	200 52 88.1	54.9	0.63	0.08895
14.5	.9279838	.0475	.3334032	2631	.1446536	6084	201 22 73.1	39.9	0.66	0.09283
15.0	-.9246782	7392	-.3407122	5633	-.1478247	7800	201 52 58.6	25.3	-0.68	0.09673
15.5	.9212387	3611	.3479961	8533	.1509848	9406	202 22 44.7	11.4	0.70	0.10065
16.0	.9173505	9133	.3552543	1117	.1541337	0900	202 51 91.3	57.9	0.71	0.10460
16.5	.9133338	3980	.3624861	3436	.1572713	2280	203 21 78.5	45.1	0.71	0.10857
17.0	.9107487	8142	.3696310	5488	.1603972	3544	203 51 66.2	32.7	0.70	0.11256
17.5	-.9070965	1624	-.3769685	7265	-.1635112	4699	204 21 54.5	21.0	-0.68	0.11657
18.0	.9033744	4426	.3840182	.8764	.1666131	5713	204 51 43.3	9.7	0.66	0.12061
18.5	.8995856	6552	.3911335	.9979	.1697026	6612	205 20 92.7	59.1	0.63	0.12464
19.0	.8957293	8002	.3982318	0905	.1727795	7386	205 50 82.6	48.9	0.6	0.12870
19.5	.8918057	8780	.4052946	1536	.1758436	8032	206 20 73.1	39.4	0.56	0.13278
20.0	-.8878151	8897	-.4123273	1866	-.1788945	8546	206 50 64.2	30.4	-0.51	0.13687
20.5	.8837576	8326	.4193295	1891	.1819322	8928	207 20 55.0	22.1	0.46	0.14097
21.0	.8796335	7098	.4263005	1602	.1849563	9174	207 50 48.1	14.2	0.41	0.14509
21.5	.8754430	5217	.4332397	.9999	.1879666	9281	208 20 40.9	6.9	0.35	0.14922
22.0	.8711864	2654	.4401467	0073	.1909629	9249	208 50 34.3	0.3	0.2	0.15336
22.5	-.8663640	9444	-.4470208	.8817	-.1939449	9074	209 19 88.2	54.2	-0.23	0.15751
23.0	.8624761	5577	.4538612	7227	.1969125	8755	209 49 82.7	48.6	0.16	0.16167
23.5	.8580426	1257	.4606630	5236	.1998653	8289	210 19 77.7	43.6	0.08	0.16584
24.0	.8535042	5886	.4674400	3020	.2028030	7671	210 49 73.3	39.1	-0.02	0.17001
24.5	.8489211	.0063	.4741769	0352	.2057255	6901	211 19 69.4	35.2	+0.04	0.17419
25.0	-.8442737	3607	-.4808781	7408	-.2086325	5977	211 49 66.0	31.7	+0.10	0.17837
25.5	.8395623	6507	.4875430	4061	.2115238	4895	212 19 63.2	28.9	0.16	0.18256
26.0	.8347871	8763	.4941710	0345	.2143991	3654	212 49 60.9	26.5	0.21	0.18676
26.5	.8299485	.0395	.5007616	6254	.2172582	2250	213 19 59.0	24.6	0.26	0.19097
27.0	.8250470	1393	.5073143	1785	.2201009	0683	213 49 57.7	23.2	0.30	0.19518
27.5	-.8200829	1765	-.5138286	6032	-.2229269	8948	214 19 56.9	22.4	+0.34	0.19940
28.0	.8150564	1513	.5203038	1688	.2257360	7045	214 49 56.5	21.9	0.37	0.20363
28.5	.8099681	.0643	.5267394	6048	.2285279	4970	215 19 56.6	22.0	0.39	0.20785
29.0	.8048182	9157	.5331348	0007	.2313025	2722	215 49 57.2	22.5	0.41	0.21208
29.5	.7996072	7061	.5394896	3560	.2340595	0298	216 19 58.2	23.5	0.42	0.21632
30.0	-.7943356	4358	-.5458033	6702	-.2367987	7696	216 49 59.7	24.9	+0.42	0.22057
30.5	.7890037	1052	.5520754	9428	.2395199	4913	217 19 61.6	26.8	0.42	0.22483
31.0	.7836119	7147	.5583053	1732	.2422228	1948	217 49 63.9	29.0	0.41	0.22911
31.5	.7781634	2645	.5644926	3610	.2449073	8799	218 19 66.6	31.7	0.39	0.23340
Nov. 1.0	.7726505	7559	.5706367	5056	.2475731	5463	218 49 69.8	34.8	0.36	0.23770
1.5	-.7670818	1885	-.5767371	6065	-.2502199	1937	219 19 73.4	38.4	+0.33	0.24202

☺ The first figures of this and the following logarithms are 9.9.

SUN'S COÖRDINATES, 1867. 401

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.				
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. = p.	
Nov. 2.0	—7614550	5630	—5827934	6634	—2528476	8220	219 49 77.3	42.2	+0.29	9.9 963636	
2.5	7557706	8799	5888051	6757	2554560	4310	220 19 81.6	46.5	0.24	963072	
3.0	7500900	1396	5947716	6428	2580450	0205	220 49 86.3	51.1	0.19	962510	
3.5	7442306	3425	6006927	5646	2606143	5904	221 19 91.4	56.2	0.13	961951	
4.0	7383759	4891	6065679	4404	2631636	1403	221 50 36.9	1.6	0.07	961395	
4.5	—7324654	5799	—6123968	2698	—2656929	6702	222 20 42.8	7.5	+0.01	960841	
5.0	7264997	6155	6181788	0525	2682018	1797	222 50 49.0	13.6	—0.06	960290	
5.5	7204790	5961	6239137	7880	2706902	6687	223 20 55.6	20.1	0.13	959743	
6.0	7144739	5222	6296010	4759	2731580	1371	223 50 62.6	27.0	0.19	959199	
6.5	7082748	3944	6352404	1159	2756050	5847	224 20 70.0	34.4	0.26	958659	
7.0	—7020922	2131	—6406313	7074	—2780309	0112	224 50 77.7	42.0	—0.33	958123	
7.5	6958566	9788	6463733	2500	2804356	4164	225 20 85.8	50.1	0.39	957591	
8.0	6895635	6919	6518661	7435	2828190	8005	225 50 94.3	58.5	0.45	957063	
8.5	6832292	3529	6573093	1874	2851808	1629	226 21 43.2	7.4	0.51	956539	
9.0	6768363	9622	6627025	5813	2875209	5036	226 51 52.5	16.6	0.56	956020	
9.5	—6703931	5203	—6680452	9247	—2898391	8224	227 21 62.1	26.2	—0.61	955505	
10.0	6638991	0275	6733371	2174	2921353	1193	227 51 72.1	36.1	0.65	954995	
10.5	6573547	4844	6785779	4590	2944093	3939	228 21 82.6	46.5	0.68	954489	
11.0	6507604	8913	6837671	6490	2966608	6461	228 51 93.4	57.2	0.71	953988	
11.5	6441167	2488	6889043	7870	2988897	8756	229 22 44.7	8.5	0.73	953492	
12.0	—6374240	5573	—6939892	8727	—3010959	0825	229 52 56.4	20.1	—0.75	953001	
12.5	6306827	8173	6990214	9057	3032791	2663	230 22 68.6	32.3	0.75	952515	
13.0	6238934	10292	7040005	8857	3054393	4272	230 52 81.1	44.7	0.75	952034	
13.5	6170564	1934	7089263	8123	3075763	5649	231 22 94.1	57.7	0.74	951558	
14.0	6101724	3106	7137983	6852	3096899	6792	231 53 47.5	11.0	0.73	951087	
14.5	—6032417	3811	—7186161	5038	—3117800	7699	232 23 61.4	24.8	—0.70	950620	
15.0	5962648	4054	7233793	2679	3138463	8369	232 53 75.7	39.0	0.67	950160	
15.5	5892422	3840	7280875	9769	3158887	8800	233 23 90.5	53.7	0.64	949703	
16.0	5821744	3173	7327403	6306	3179071	8991	233 54 45.7	8.8	0.60	949251	
16.5	5750619	2060	7373373	2284	3199012	8939	234 24 61.4	24.5	0.55	948803	
17.0	—5679051	0503	—7418781	7701	—3218709	8642	234 54 77.5	40.5	—0.50	948360	
17.5	5607045	8509	7463624	2553	3238160	8100	235 24 94.1	57.1	0.44	947921	
18.0	5534605	6080	7507897	6835	3257364	7310	235 55 51.1	14.0	0.39	947485	
18.5	5461737	3224	7551597	0544	3276319	6271	236 25 68.6	31.5	0.31	947055	
19.0	5388446	9944	7594719	3676	3295023	4982	236 55 86.5	49.3	0.24	946628	
19.5	—5314737	6246	—7637259	6226	—3313475	3441	237 26 44.8	7.5	—0.17	946205	
20.0	5240617	2137	7679212	8189	3331673	1646	237 56 63.5	26.1	0.10	945786	
20.5	5166900	7621	7720576	9563	3349615	9505	238 26 82.7	45.2	—0.04	945371	
21.0	5091163	2705	7761347	0344	3367301	7287	238 57 42.4	4.8	+0.02	944959	
21.5	5015841	7394	7801522	0529	3384728	4721	239 27 62.5	24.9	0.08	944550	
22.0	—4940131	1695	—7841096	0113	—3401894	1893	239 57 83.0	45.3	+0.13	944144	
22.5	4864034	5609	7880066	9094	3418799	8805	240 28 43.8	6.1	0.18	943742	
23.0	4787561	9147	7918430	7469	3435441	5454	240 58 65.0	27.2	0.23	943342	
23.5	4710715	2312	7956183	5233	3451819	1839	241 28 86.6	48.7	0.27	942945	
24.0	4633503	5110	7993321	2382	3467930	7958	241 59 48.6	10.6	0.31	942551	
24.5	—4555931	7549	—8029842	8914	—3483773	3908	242 29 71.0	32.9	+0.33	942160	
25.0	4478006	9634	8065743	4826	3499348	9390	242 59 93.7	55.5	0.35	941772	
25.5	4399733	1371	8101092	0114	3514652	4701	243 30 56.8	18.5	0.36	941388	
26.0	4321118	2766	8135671	4776	3529684	9741	244 0 80.2	41.8	0.37	941007	
26.5	4242168	3326	8169692	8908	3544443	4507	244 31 43.9	5.5	0.36	940629	
27.0	—4162390	4558	—8203078	2205	—3558928	9000	245 1 68.0	29.5	+0.35	940253	
27.5	4083290	4963	8235828	4966	3573137	3216	245 31 92.4	53.9	0.33	939880	
28.0	4003375	5062	8267937	7086	3587070	7156	246 2 57.0	18.4	0.31	939510	
28.5	3923151	4848	8294904	8564	3600724	0817	246 32 81.9	43.3	0.27	939143	
29.0	3842625	4331	8330227	9398	3614099	4199	247 3 47.1	8.4	0.23	938780	
29.5	—3761803	3518	—8360404	9586	—3627194	7301	247 33 72.6	33.8	+0.19	938420	
30.0	3690693	2417	8389931	9125	3640007	0120	248 3 98.3	59.4	0.14	938064	
30.5	3599301	1034	8418807	8012	3652537	2657	248 34 64.1	25.1	0.08	937711	
Dec. 1.0	3517633	9375	8447029	6246	3664784	4910	249 4 90.1	51.0	+0.03	937362	
1.5	3435696	7447	8474596	3925	3676746	6878	249 35 56.4	17.3	—0.03	937017	
2.0	—3353498	5258	—8501506	0747	—3688424	8563	250 5 82.9	43.7	—0.09	936677	

402 SUN'S COÖRDINATES, 1867.

Date, 1867.	RECTANGULAR EQUATORIAL.						POLAR ECLIPTIC.					
	X.	X'.	Y.	Y'.	Z.	Z'.	$\lambda = \odot$'s True Longitude.	λ'	$\delta = \odot$'s Latitude.	Log. Rad. Vect. $\rightarrow \rho$.		
Dec. 2.5	—3271044	2813	—8527756	7010	—3699817	9963	250 36' 49.6"	10.4	—0.16	936341		
3.0	.3188340	.0117	.8553345	2612	.3710923	1076	251 6 76.5	37.2	0.23	936010		
3.5	.3105393	7179	.8578271	7551	.3721741	1901	251 37 43.6	4.2	0.30	935683		
4.0	.3022210	4004	.8602533	1826	.3732270	2437	252 7 70.9	31.4	0.36	935361		
4.5	.2938797	0600	.8626130	5436	.3742511	2685	252 37 98.4	58.8	0.43	935045		
5.0	—2855160	6971	—8649059	8379	—3752462	2843	253 8 66.1	26.4	—0.49	934734		
5.5	.2771305	3124	.8671319	0653	.3762123	2311	253 38 94.0	54.2	0.55	934428		
6.0	.2687240	9067	.8692909	2257	.3771492	1687	254 9 62.0	22.1	0.60	934128		
6.5	.2602971	4805	.8713827	3189	.3780569	0771	254 39 90.2	50.3	0.64	933834		
7.0	.2518504	.0345	.8734072	3448	.3789354	9564	255 10 58.6	18.6	0.68	933546		
7.5	—2433845	5695	—8753643	3033	—3797846	8064	255 40 87.2	47.2	—0.72	933264		
8.0	.2349001	.0859	.8772537	1941	.3806045	6271	256 11 55.9	15.8	0.75	932989		
8.5	.2263979	5845	.8790754	0172	.3813950	4184	256 41 84.8	44.6	0.77	932720		
9.0	.2178785	.0658	.8808293	7725	.3821560	1802	257 12 53.9	13.6	0.79	932457		
9.5	.2093424	5305	.8825152	4508	.3828875	9125	257 42 83.2	42.8	0.80	932201		
10.0	—2007902	.9790	—8841330	0793	—3835894	6152	258 13 52.7	12.2	—0.80	931951		
10.5	.1922226	4121	.8856826	6300	.3842617	2883	258 43 82.4	41.8	0.79	931708		
11.0	.1836401	8303	.8871639	1127	.3849042	9315	259 14 52.2	11.5	0.77	931472		
11.5	.1750434	2343	.8885768	5270	.3855171	5452	259 44 82.3	41.6	0.75	931243		
12.0	.1664331	6247	.8899211	8727	.3861002	1290	260 15 52.6	11.8	0.72	931020		
12.5	—1578099	.0022	—8911968	1499	—3866534	6820	260 45 83.1	42.3	—0.68	930804		
13.0	.1491743	3673	.8924037	3583	.3871767	2069	261 16 53.9	13.0	0.64	930594		
13.5	.1405270	7207	.8935417	4978	.3876702	7011	261 46 84.9	43.9	0.58	930391		
14.0	.1318687	.0630	.8946106	5632	.3881337	1653	262 17 56.0	14.9	0.54	930195		
14.5	.1231999	3949	.8956104	5695	.3885672	5895	262 47 87.4	46.2	0.48	929905		
15.0	—1145213	7169	—8965409	5016	—3889706	.0035	263 18 50.0	17.7	—0.42	929622		
15.5	.1058335	.0297	.8974020	3642	.3893439	3775	263 48 90.8	49.4	0.36	929445		
16.0	.0971372	3340	.8981937	1575	.3896871	7213	264 19 62.8	21.3	0.30	929274		
16.5	.0884330	6304	.8989158	8811	.3900000	0349	264 49 95.0	53.5	0.23	929039		
17.0	.0797215	9194	.8995683	5352	.3902827	3182	265 20 67.5	25.9	0.16	928815		
17.5	—0710035	2020	—9001511	1195	—3905352	5714	265 50 100.2	58.6	—0.09	928598		
18.0	.0622795	4785	.9006640	6340	.3907573	7943	266 21 73.0	31.3	—0.03	928381		
18.5	.0535502	7497	.9011069	0784	.3909491	9869	266 52 46.1	4.3	+0.03	928179		
19.0	.0448164	.0164	.9014797	4528	.3911105	1490	267 22 79.4	37.5	0.09	927973		
19.5	.0360787	2792	.9017824	7620	.3912415	2807	267 53 62.9	10.9	0.15	927741		
20.0	—0273377	5386	—9020150	.9912	—3913421	3821	268 23 86.6	44.5	+0.20	927515		
20.5	.0185942	7956	.9021773	1551	.3914122	4529	268 54 60.5	18.3	0.24	927293		
21.0	.0098489	.0507	.9022692	2486	.3914518	4933	269 24 94.6	52.3	0.28	927077		
21.5	—0011025	3047	.9022906	2716	.3914610	5032	269 55 68.8	26.4	0.31	926865		
22.0	+0076444	4418	.9022415	2242	.3914396	4826	270 26 43.2	0.7	0.33	926657		
22.5	+0163910	1880	.9021219	1063	.3913877	4314	270 56 77.7	35.2	+0.35	926453		
23.0	.0251364	.9331	.9019319	9180	.3913053	3498	271 27 52.4	9.8	0.36	926254		
23.5	.0338801	6764	.9016714	6592	.3911923	2375	271 57 87.2	44.5	0.36	926060		
24.0	.0426214	4174	.9013404	3299	.3910488	0947	272 28 62.1	19.3	0.35	925870		
24.5	.0513595	1552	.9009390	9302	.3908747	9213	272 58 97.2	54.3	0.33	925684		
25.0	+0600936	.8890	.9004671	4600	.3906701	7174	273 29 72.3	29.3	+0.31	925502		
25.5	.0688230	6181	.8999248	9194	.3904349	4829	274 0 47.5	4.4	0.28	925324		
26.0	.0775469	3417	.8993121	3085	.3901692	2179	274 30 82.7	39.5	0.25	925150		
26.5	.0862647	.0592	.8986291	6272	.3898731	9225	275 1 58.0	14.8	0.21	924980		
27.0	.0949757	7700	.8978758	8757	.3895466	5967	275 31 93.3	50.0	0.16	924814		
27.5	+1036791	4732	.8970523	0539	.3891896	2404	276 2 68.6	25.3	+0.11	924653		
28.0	.1123742	1681	.8961587	1621	.3888023	8537	276 33 43.9	0.5	+0.06	924496		
28.5	.1210603	.8540	.8951950	2002	.3883846	4367	277 3 79.2	35.7	0.00	924344		
29.0	.1297367	5302	.8941614	1684	.3879365	9812	277 34 54.5	10.9	—0.07	924196		
29.5	.1384027	1960	.8930579	1667	.3874581	5114	278 4 89.8	46.1	0.14	924053		
30.0	+1470576	.8508	.8918847	8953	.3869495	.0084	278 35 65.1	21.3	—0.20	923914		
30.5	.1557070	4939	.8906419	6543	.3864107	4652	279 5 100.4	56.5	0.27	923779		
31.0	.1643313	1945	.8893296	3438	.3858417	8968	279 36 75.6	31.6	0.33	923649		
31.5	.1721488	7420	.8879480	9640	.3852427	2984	280 7 50.8	6.8	0.39	923525		
32.0	+1815525	3458	.8864973	5151	.3846136	6699	280 37 85.9	41.8	—0.45	923406		

HELIOCENTRIC COÖRDINATES. 403

MERCURY.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}x$.	$-\frac{y^2}{r^2}y$.	$-\frac{z^2}{r^2}z$.
2265	-0.3976	-0.0693	+0.0305	9.6054	188 15.9	+5.91	+ 0.88	-0.45
2270	0.3848	0.1859	0.0187	9.6311	205 38.2	4.78	2.31	0.24
2275	0.3356	0.2952	+0.0051	9.6503	221 17.9	3.66	3.22	-0.06
2280	0.2585	0.3803	-0.0090	9.6627	235 51.6	2.59	3.80	+0.09
2285	0.1618	0.4366	0.0224	9.6685	249 49.3	1.56	4.20	0.22
2290	-0.0532	0.4611	0.0341	9.6678	263 37.0	+0.52	4.45	0.33
2295	+0.0592	0.4518	0.0434	9.6606	277 40.0	-0.60	4.58	0.44
3000	0.1670	0.4078	0.0493	9.6468	292 24.9	1.86	4.56	0.55
3005	0.2603	0.3294	0.0510	9.6263	308 22.8	3.35	4.24	0.66
3010	0.3281	0.2191	0.0478	9.5993	326 12.1	5.09	3.39	0.74
3015	0.3572	-0.0835	0.0389	9.5669	346 39.2	6.93	+ 1.62	0.76
3020	0.3330	+0.0635	0.0245	9.5325	10 33.0	8.21	- 1.56	0.60
3025	0.2496	0.1977	-0.0057	9.5030	38 19.6	7.53	5.96	+0.17
3030	+0.1100	0.2871	+0.0143	9.4883	69 10.8	-3.67	9.58	-0.48
3035	-0.0563	0.3060	0.0308	9.4950	100 37.5	+1.79	9.75	0.98
3040	0.2101	0.2528	0.0401	9.5201	129 46.4	5.63	6.77	1.07
3045	0.3229	0.1486	0.0414	9.5537	155 9.2	6.96	3.16	0.88
3050	0.3845	+0.0198	0.0360	9.5874	176 50.4	6.47	- 0.33	0.60
3055	0.3973	-0.1122	0.0260	9.6166	195 34.3	5.47	+ 1.54	0.36
3060	0.3687	0.2329	+0.0133	9.6397	212 10.0	4.32	2.73	-0.16
3065	0.3071	0.3330	-0.0006	9.6561	227 18.9	3.22	3.48	+0.01
3070	0.2211	0.4068	0.0146	9.6658	241 34.6	2.17	3.98	0.14
3075	0.1187	0.4505	0.0274	9.6690	255 25.2	1.14	4.31	0.26
3080	-0.0076	0.4615	0.0322	9.6657	269 16.1	+0.07	4.52	0.37
3085	+0.1040	0.4381	0.0462	9.6558	283 32.7	-1.09	4.60	0.48
3090	0.2071	0.3900	0.0505	9.6393	298 43.2	2.44	4.47	0.59
3095	0.2917	0.2981	0.0504	9.6160	315 21.2	4.03	3.98	0.70
3100	0.3453	0.1664	0.0448	9.5866	334 8.6	5.85	2.82	0.76
3105	0.3548	-0.0241	0.0337	9.5529	355 54.2	7.58	+ 0.52	0.72
3110	0.3072	+0.1212	-0.0172	9.5194	21 22.3	8.27	- 3.27	+0.46
3115	0.1984	0.2413	+0.0026	9.4947	50 35.6	6.33	7.79	-0.09
3120	+0.0435	0.3040	0.0218	9.4884	82 3.5	-1.45	10.14	0.73
3125	-0.1223	0.2922	0.0356	9.5035	112 51.8	+3.67	8.78	1.07
3130	0.2618	0.2151	0.0415	9.5333	140 33.3	6.40	5.26	1.02
3135	0.3541	+0.0979	0.0399	9.5677	164 22.1	6.83	- 1.89	0.77
3140	0.3952	-0.0344	0.0324	9.5999	184 45.2	6.10	+ 0.53	0.50
3145	0.3902	0.1632	0.0211	9.6268	202 31.5	5.00	2.09	0.27
3150	0.3472	0.2764	+0.0077	9.6472	218 27.5	3.87	3.08	-0.09
3155	0.2747	0.3665	-0.0064	9.6609	233 11.1	2.79	3.71	+0.06
3160	0.1810	0.4284	0.0200	9.6679	247 13.5	1.74	4.13	0.19
3165	-0.0741	0.4590	0.0321	9.6685	261 1.2	+0.71	4.42	0.31
3170	+0.0381	0.4562	0.0419	9.6625	274 59.4	-0.38	4.57	0.42
3175	0.1474	0.4187	0.0485	9.6499	289 34.2	1.61	4.58	0.53
3180	0.2444	0.3466	0.0511	9.6306	305 15.8	3.05	4.33	0.64
3185	0.3180	0.2420	0.0488	9.6048	322 40.8	4.74	3.61	0.73
3190	0.3553	-0.1104	0.0410	9.5733	342 34.5	6.59	+ 2.05	0.70
3195	0.3429	+0.0360	0.0276	9.5389	5 46.3	8.07	- 0.85	0.64
3200	0.2701	0.1749	-0.0094	9.5077	32 49.7	7.88	5.10	+0.27
3205	+0.1394	0.2752	+0.0108	9.4895	63 14.9	-4.61	9.11	-0.24
3210	-0.0249	0.3082	0.0232	9.4922	94 49.2	+0.81	10.02	0.92
3215	0.1838	0.2675	0.0390	9.5144	124 34.0	5.12	7.45	1.09
3220	-0.3055	+0.1708	+0.0417	9.5471	150 41.1	+6.79	- 3.80	-0.92

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 18.

404 HELIOCENTRIC COÖRDINATES.

MERCURY.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}x$.	$-\frac{y^2}{r^2}y$.	$-\frac{z^2}{r^2}z$.
3225	-0.3768	+0.0448	+0.0374	9.5813	173 1.0	+6.62	-0.79	-0.66
3230	0.3983	-0.0879	0.0281	9.6116	192 14.3	5.67	+1.25	0.40
3235	0.3768	0.2115	0.0159	9.6359	209 10.7	4.54	2.54	0.19
3240	0.3208	0.3161	+0.0020	9.6535	224 33.2	3.42	3.36	-0.02
3245	0.2388	0.3952	-0.0120	9.6645	238 56.6	2.36	3.90	+0.12
3250	0.1388	0.4447	0.0251	9.6689	252 50.0	1.33	4.26	0.24
3255	-0.0287	0.4620	0.0364	9.6668	266 38.9	+0.28	4.49	0.35
3260	+0.0834	0.4452	0.0450	9.6582	280 48.6	-0.86	4.60	0.47
3265	0.1889	0.3936	0.0501	9.6429	295 46.6	2.17	4.51	0.58
3270	0.2778	0.3079	0.0508	9.6209	312 5.3	3.71	4.11	0.68
3275	0.3383	0.1912	0.0463	9.5926	330 24.8	5.49	3.11	0.75
3280	0.3570	-0.0517	0.0362	9.5594	351 33.2	7.29	+1.06	0.74
3285	0.3208	+0.0049	0.0207	9.5253	16 17.3	8.29	-2.45	0.53
3290	0.2231	0.2222	-0.0012	9.4982	44 51.9	6.96	6.92	+0.04
3295	+0.0746	0.2977	+0.0184	9.4879	76 6.4	-2.50	9.96	-0.62
3300	-0.0922	0.3000	0.0335	9.4993	107 16.0	+2.85	9.28	1.04
3305	0.2389	0.2335	0.0410	9.5270	135 39.2	6.10	5.97	1.05
3310	0.3407	+0.1217	0.0407	9.5612	160 11.0	6.87	-2.45	0.83
3315	0.3912	-0.0094	0.0342	9.5942	181 9.1	6.28	+0.15	0.55
3320	0.3943	0.1399	0.0234	9.6222	199 21.1	5.21	1.85	0.31
3325	0.3577	0.2567	+0.0103	9.6439	215 34.6	4.08	2.93	-0.12
3330	0.2902	0.3515	-0.0037	9.6588	230 29.3	2.98	3.61	+0.04
3335	-0.1999	0.4190	-0.0175	9.6671	244 37.2	+1.94	+4.07	+0.17

VENUS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^2}x$.	$-\frac{y^2}{r^2}y$.	$-\frac{z^2}{r^2}z$.
2965	-0.2296	+0.6807	+0.0233	9.8566	108 34.3	+ 7.51	-22.26	-0.76
2970	0.3232	0.6411	0.0281	9.8564	116 41.3	10.58	20.98	0.92
2975	0.4103	0.5888	0.0324	9.8564	124 48.5	13.44	19.28	1.06
2980	0.4893	0.5248	0.0359	9.8564	132 55.7	16.02	17.18	1.18
2985	0.5586	0.4503	0.0388	9.8564	141 2.9	18.28	14.74	1.27
2990	0.6166	0.3668	0.0409	9.8565	149 9.9	20.17	11.99	1.34
2995	0.6625	0.2761	0.0421	9.8567	157 16.6	21.64	9.02	1.38
3000	0.6952	0.1798	0.0426	9.8569	165 22.9	22.67	5.87	1.39
3005	0.7141	+0.0800	0.0422	9.8572	173 28.6	23.24	- 2.61	1.37
3010	0.7188	-0.0214	0.0409	9.8575	181 33.7	23.35	+ 0.69	1.33
3015	0.7093	0.1224	0.0389	9.8578	189 38.0	22.99	3.96	1.26
3020	0.6859	0.2209	0.0360	9.8582	197 41.5	22.17	7.14	1.17
3025	0.6489	0.3151	0.0325	9.8586	205 44.2	20.92	10.16	1.05
3030	0.5993	0.4032	0.0283	9.8590	213 45.9	19.27	12.26	0.91
3035	0.5379	0.4833	0.0236	9.8594	221 46.9	17.24	15.46	0.76
3040	0.4660	0.5541	0.0184	9.8598	229 46.8	14.89	17.71	0.59
3045	0.3850	0.6140	0.0129	9.8602	237 45.9	12.27	19.57	0.41
3050	0.2966	0.6620	0.0071	9.8606	245 44.0	9.43	21.05	0.23
3055	0.2025	0.6973	+0.0012	9.8610	253 41.4	6.42	22.12	-0.04
3060	0.1044	0.7191	-0.0048	9.8613	261 38.0	3.30	22.75	+0.15
3065	-0.0043	0.7270	0.0106	9.8616	269 34.0	+ 0.13	22.86	0.34
3070	+0.0958	0.7210	0.0163	9.8618	277 29.4	- 3.02	22.73	0.52
3075	+0.1942	-0.7011	-0.0216	9.8620	285 24.3	- 6.11	+22.08	+0.68

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

HELIOCENTRIC COÖRDINATES. 405

VENUS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3080	+0.2888	-0.6678	-0.0266	9.8622	293 18.8	- 9.08	+21.01	+0.84
3085	0.3778	0.6217	0.0310	9.8622	301 13.1	11.87	19.55	0.97
3090	0.4597	0.5638	0.0348	9.8623	309 7.3	14.45	17.72	1.09
3095	0.5327	0.4950	0.0380	9.8623	317 1.5	16.75	15.56	1.19
3100	0.5956	0.4163	0.0404	9.8622	324 55.8	18.73	13.11	1.27
3105	0.6471	0.3306	0.0421	9.8620	332 50.3	20.37	10.41	1.32
3110	0.6861	0.2381	0.0429	9.8618	340 45.2	21.63	7.51	1.35
3115	0.7123	0.1410	0.0430	9.8616	348 40.5	22.48	4.45	1.36
3120	0.7243	-0.0412	0.0422	9.8613	356 36.4	22.91	+ 1.30	1.33
3125	0.7226	+0.0594	0.0406	9.8610	4 33.0	22.91	- 1.88	1.29
3130	0.7070	0.1589	0.0382	9.8607	12 30.3	22.47	5.05	1.21
3135	0.6776	0.2552	0.0350	9.8603	20 28.5	21.59	8.13	1.12
3140	0.6351	0.3467	0.0313	9.8599	28 27.4	20.30	11.08	1.00
3145	0.5803	0.4314	0.0268	9.8595	36 27.3	18.60	13.83	0.86
3150	0.5142	0.5077	0.0219	9.8591	44 28.1	16.52	16.31	0.70
3155	0.4380	0.5740	0.0165	9.8587	52 29.6	14.42	18.50	0.53
3160	0.3532	0.6291	0.0109	9.8583	60 32.4	11.41	20.33	0.35
3165	0.2615	0.6718	-0.0050	9.8579	68 35.9	8.47	21.77	+0.16
3170	0.1646	0.7013	+0.0010	9.8575	76 40.1	5.35	22.78	-0.03
3175	+0.0654	0.7169	0.0070	9.8572	84 45.1	- 2.10	23.34	0.22
3180	-0.0369	0.7183	0.0129	9.8570	92 50.8	+ 1.20	23.42	0.42
3185	0.1376	0.7055	0.0184	9.8567	100 57.0	4.49	23.04	0.60
3190	0.2355	0.6786	0.0237	9.8566	109 3.6	7.70	22 19	0.77
3195	0.3237	0.6383	0.0284	9.8564	117 10.6	10.75	20.89	0.93
3200	0.4154	0.5852	0.0326	9.8564	125 17.8	13.60	19.16	1.06
3205	0.4939	0.5235	0.0361	9.8564	133 25.0	16.16	17.04	1.18
3210	0.5624	0.4454	0.0389	9.8564	141 32.2	18.41	14.58	1.27
3215	0.6198	0.3615	0.0410	9.8566	149 39.2	20.27	11.82	1.34
3220	0.6649	0.2703	0.0422	9.8567	157 45.9	21.71	8.83	1.38
3225	0.6968	0.1738	0.0426	9.8569	165 52.1	22.72	5.67	1.39
3230	0.7148	+0.0738	0.0421	9.8572	173 57.8	23.27	- 2.40	1.37
3235	0.7186	-0.0276	0.0406	9.8575	182 2.8	23.34	+ 0.90	1.33
3240	0.7083	0.1285	0.0387	9.8579	190 7.1	22.95	4.16	1.25
3245	0.6840	0.2268	0.0358	9.8582	198 10.6	22.11	7.33	1.16
3250	0.6463	0.3207	0.0323	9.8586	206 13.2	20.83	10.34	1.04
3255	0.5958	0.4083	0.0281	9.8590	214 14.9	19.15	13.12	0.90
3260	0.5338	0.4879	0.0233	9.8595	222 15.7	17.11	15.64	0.75
3265	0.4613	0.5580	0.0181	9.8599	230 15.6	14.74	17.84	0.58
3270	0.3798	0.6173	0.0126	9.8603	238 14.6	12.11	19.67	0.40
3275	0.2910	0.6646	0.0068	9.8607	246 12.7	9.25	21.13	0.21
3280	0.1966	0.6990	+0.0008	9.8610	254 10.0	6.23	22.17	-0.03
3285	-0.0983	0.7200	-0.0051	9.8613	262 6.6	+ 3.11	22.78	+0.16
3290	+0.0018	0.7270	0.0110	9.8616	270 2.5	- 0.05	22.96	0.35
3295	0.1019	0.7202	0.0166	9.8618	277 57.9	3.21	22.70	0.52
3300	0.2000	0.6905	0.0219	9.8620	285 52.7	6.30	22.02	0.69
3305	0.2944	0.6654	0.0268	9.8622	293 47.2	9.26	20.93	0.84
3310	0.3802	0.6185	0.0312	9.8623	301 41.5	12.04	19.45	0.98
3315	0.4644	0.5599	0.0350	9.8623	309 35.7	14.60	17.60	1.10
3320	0.5369	0.4905	0.0381	9.8623	317 29.9	16.88	15.42	1.20
3325	0.5991	0.4118	0.0405	9.8622	325 24.1	18.95	12.95	1.28
3330	0.6498	0.3251	0.0421	9.8620	333 18.7	20.46	10.24	1.33
3335	+0.6881	-0.2323	-0.0430	9.8618	341 13.6	-21.65	+ 7.33	+1.36

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

406 HELIOCENTRIC COÖRDINATES.

THE EARTH.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
2660	-0.0450	+0.9822	0.0000	9.9927	92° 37.4	+ 0.63	-13.78	0.00
2700	0.2181	0.9587		9.9927	102 48.8	3.06	13.45	
2800	0.3844	0.9653		9.9928	113 0.5	5.39	12.70	
2900	0.5389	0.9241		9.9932	123 11.1	7.54	11.52	
3000	0.6766	0.7170		9.9938	133 20.3	9.40	9.98	
3010	0.7936	0.5880		9.9946	143 27.7	10.99	8.14	
3020	0.8864	0.4410		9.9956	153 32.7	12.19	6.06	
3030	0.9520	0.2904		9.9966	163 35.0	13.00	3.83	
3040	0.9887	+0.1114		9.9977	173 34.2	13.40	- 1.51	
3050	0.9959	-0.0609		9.9990	183 30.0	13.38	+ 0.82	
3060	0.9736	0.2314		0.0002	193 22.4	12.97	3.09	
3070	0.9225	0.3951		0.0015	203 11.3	12.19	5.22	
3080	0.8443	0.5471		0.0026	212 56.9	11.06	7.17	
3090	0.7417	0.6833		0.0037	222 39.5	9.63	8.89	
3100	0.6179	0.8000		0.0047	232 19.3	7.96	10.33	
3110	0.4764	0.8939		0.0056	241 56.6	6.11	11.47	
3120	0.3214	0.9623		0.0063	251 31.9	4.11	12.29	
3130	- 0.1573	1.0034		0.0068	261 5.6	+ 2.01	12.77	
3140	+ 0.0113	1.0163		0.0071	270 38.2	- 0.14	12.90	
3150	0.1795	1.0006		0.0072	280 10.2	2.28	12.70	
3160	0.3427	0.9568		0.0071	289 42.2	4.36	12.16	
3170	0.4963	0.8863		0.0068	299 14.7	6.32	11.28	
3180	0.6359	0.7908		0.0064	308 48.3	8.12	10 10	
3190	0.7576	0.6728		0.0057	318 23.4	9.72	8.63	
3200	0.8577	0.5357		0.0048	328 0.5	11.07	6.91	
3210	0.9333	0.3834		0.0039	337 40.0	12.13	4.98	
3220	0.9822	0.2201		0.0028	347 22.4	12.86	2.88	
3230	1.0026	-0.0503		0.0016	357 7.8	13.23	+ 0.66	
3240	0.9936	+0.1210		0.0004	6 56.4	13.22	- 1.61	
3250	0.9554	0.2886		9.9991	16 48.4	12.82	3.87	
3260	0.8888	0.4476		9.9979	26 43.8	12.03	6.06	
3270	0.7956	0.5932		9.9967	36 42.6	10.86	8.10	
3280	0.6784	0.7210		9.9956	46 44.5	9.33	9.92	
3290	0.5406	0.8268		9.9947	56 49.2	7.48	11.45	
3300	0.3863	0.9072		9.9939	66 56.3	5.37	12.63	
3310	0.2201	0.9596		9.9932	77 5.3	3.08	13.42	
3320	+ 0.0470	0.9824		9.9928	87 15.8	- 0.66	13.78	
3330	- 0.1276	+0.9750	0.0000	9.9927	97 27.4	+ 1.79	-13.68	0.00

MARS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
2660	-0.3374	+1.5674	+0.0417	0.2052	102° 9.8	+0.15	-0.67	-0.02
2700	0.4671	1.5444	0.0443	0.2079	106 50.6	0.20	0.65	0.02
2800	0.5935	1.5097	0.0467	0.2102	111 28.1	0.25	0.62	0.02
2900	0.7157	1.4648	0.0487	0.2124	116 2.7	0.29	0.60	0.02
3000	0.8330	1.4101	0.0503	0.2144	120 34.6	0.33	0.57	0.02
3010	0.9448	1.3460	0.0516	0.2162	125 4.1	0.37	0.53	0.02
3020	1.0503	1.2727	0.0526	0.2177	129 31.6	0.41	0.50	0.02
3030	-1.1487	+1.1910	+0.0533	0.2190	133 57.4	+0.45	-0.46	-0.02

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

HELIOCENTRIC COÖRDINATES. 407

MARS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3040	-1.2397	+1.1018	+0.0536	0.2200	138 21.9	+0.48	-0.43	-0.02
3050	1.3230	1.0056	0.0535	0.2208	142 45.2	0.51	0.39	0.02
3060	1.3978	0.9029	0.0531	0.2213	147 7.7	0.54	0.35	0.02
3070	1.4636	0.7943	0.0524	0.2216	151 29.8	0.56	0.30	0.02
3080	1.5198	0.6806	0.0513	0.2216	155 51.7	0.58	0.26	0.02
3090	1.5663	0.5625	0.0499	0.2213	160 13.8	0.60	0.22	0.02
3100	1.6129	0.4408	0.0482	0.2208	164 36.4	0.62	0.17	0.02
3110	1.6591	0.3162	0.0462	0.2200	168 59.8	0.63	0.12	0.02
3120	1.6448	0.1894	0.0438	0.2190	173 24.4	0.64	0.07	0.02
3130	1.6496	+0.0615	0.0412	0.2177	177 50.4	0.65	-0.02	0.02
3140	1.6437	-0.0667	0.0384	0.2162	182 18.0	0.65	+0.03	0.02
3150	1.6269	0.1944	0.0353	0.2144	186 47.6	0.65	0.08	0.01
3160	1.5990	0.3208	0.0319	0.2124	191 19.6	0.65	0.13	0.01
3170	1.5601	0.4450	0.0283	0.2101	195 54.4	0.65	0.18	0.01
3180	1.5104	0.5661	0.0243	0.2076	200 32.2	0.64	0.24	0.01
3190	1.4501	0.6333	0.0203	0.2049	205 13.3	0.62	0.29	0.01
3200	1.3796	0.7956	0.0163	0.2020	209 58.0	0.60	0.35	0.01
3210	1.2991	0.9022	0.0121	0.1990	214 46.5	0.58	0.40	-0.01
3220	1.2088	1.0020	0.0077	0.1958	219 39.2	0.55	0.46	0.00
3230	1.1091	1.0940	+0.0034	0.1924	224 36.5	0.52	0.52	0.00
3240	1.0006	1.1774	-0.0010	0.1889	229 38.6	0.48	0.57	0.00
3250	0.8842	1.2514	0.0054	0.1853	234 45.6	0.43	0.62	0.00
3260	0.7607	1.3151	0.0097	0.1816	239 57.8	0.38	0.67	0.00
3270	0.6307	1.3676	0.0140	0.1778	245 15.4	0.33	0.71	+0.01
3280	0.4952	1.4083	0.0181	0.1740	250 38.5	0.26	0.75	0.01
3290	0.3554	1.4367	0.0221	0.1703	256 7.3	0.19	0.78	0.01
3300	0.2125	1.4521	0.0259	0.1666	261 41.8	0.12	0.81	0.01
3310	-0.0676	1.4538	0.0294	0.1630	267 22.0	+0.04	0.83	0.02
3320	+0.0784	1.4411	0.0327	0.1595	273 7.8	-0.05	0.85	0.02
3330	+0.2249	-1.4132	-0.0357	0.1562	278 59.1	-0.14	+0.85	+0.02

JUPITER.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
2960	+3.31747	-3.84244	-0.06136	0.70559	310 48 48	-114.56	+132.69	+2.12
2970	3.37343	3.78909	0.06282	0.70531	311 41 8	116.72	131.10	2.17
2980	3.42826	3.73449	0.06425	0.70500	312 33 32	118.86	129.48	2.23
2990	3.48264	3.67941	0.06568	0.70472	313 26 0	120.98	127.81	2.28
3000	3.53623	3.62350	0.06709	0.70445	314 18 32	123.07	126.11	2.33
3010	3.58901	3.56676	0.06848	0.70418	315 11 7	125.14	124.36	2.39
3020	3.64098	3.50920	0.06986	0.70392	316 3 47	127.19	122.58	2.44
3030	3.69211	3.45084	0.07123	0.70365	316 56 31	129.21	120.76	2.49
3040	3.74240	3.39170	0.07257	0.70339	317 49 18	131.20	118.91	2.54
3050	3.79183	3.33177	0.07390	0.70313	318 42 9	133.17	117.01	2.60
3060	3.84038	3.27107	0.07522	0.70287	319 35 4	135.11	115.09	2.65
3070	3.88805	3.20963	0.07652	0.70263	320 28 3	137.03	113.12	2.70
3080	3.93483	3.14743	0.07779	0.70238	321 21 5	138.92	111.12	2.75
3090	3.98069	3.08452	0.07905	0.70213	322 14 11	140.78	109.09	2.80
3100	+4.02561	-3.02069	-0.08029	0.70189	323 7 21	-142.61	+107.01	+2.84

Note. — The Epoch is the 2400,000th day of the Julian Period = 1888, November 16.

408 HELIOCENTRIC COÖRDINATES.

JUPITER.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
3110	+4.06364	-2.95635	-0.08151	0.70164	324° 0' 34"	+144.41	+104.91	+2.89
3120	4.11270	2.89154	0.08271	0.70141	324 53 51	146.18	102.77	2.94
3130	4.15481	2.82585	0.08390	0.70117	325 47 11	147.91	100.60	2.99
3140	4.19595	2.75949	0.08507	0.70094	326 40 35	149.62	98.40	3.03
3150	4.23610	2.69250	0.08621	0.70071	327 34 2	151.29	96.16	3.08
3160	4.27526	2.62487	0.08733	0.70049	328 27 32	152.92	93.89	3.12
3170	4.31342	2.55662	0.08844	0.70027	329 21 6	154.52	91.59	3.17
3180	4.35056	2.48778	0.08953	0.70005	330 14 43	156.09	89.26	3.21
3190	4.38668	2.41834	0.09059	0.69983	331 8 23	157.62	86.89	3.26
3200	4.42177	2.34834	0.09163	0.69962	332 2 7	159.11	84.50	3.30
3210	4.45582	2.27778	0.09265	0.69941	332 55 53	160.57	82.08	3.34
3220	4.48881	2.20660	0.09365	0.69921	333 49 43	161.98	79.63	3.38
3230	4.52174	2.13507	0.09463	0.69901	334 43 35	163.36	77.15	3.42
3240	4.55161	2.06295	0.09558	0.69881	335 37 31	164.70	74.65	3.46
3250	4.58140	1.99034	0.09651	0.69862	336 31 29	166.00	72.12	3.50
3260	4.61009	1.91727	0.09742	0.69843	337 25 30	167.26	69.56	3.53
3270	4.63770	1.84373	0.09830	0.69825	338 19 34	168.47	66.98	3.57
3280	4.66420	1.76975	0.09916	0.69807	339 13 41	169.64	64.37	3.61
3290	4.68958	1.69535	0.10000	0.69789	340 7 51	170.77	61.74	3.64
3300	4.71385	1.62155	0.10081	0.69772	341 2 3	171.87	59.08	3.68
3310	4.73700	1.54536	0.10160	0.69755	341 56 17	172.91	56.41	3.71
3320	4.75902	1.46980	0.10237	0.69739	342 50 34	173.91	53.71	3.74
3330	+4.77989	-1.39389	-0.10311	0.69723	343 44 54	-174.86	+ 50.99	+3.77

SATURN.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{y^2}{r^3}y$.	$-\frac{z^2}{r^3}z$.
2960	-6.81428	-7.15589	+0.39220	0.99516	226° 22' 50"	+9.53	+10.00	-0.55
2970	6.77676	7.19431	0.39133	0.99525	226 41 29	9.47	10.05	0.55
2980	6.73904	7.23251	0.39044	0.99534	227 0 8	9.41	10.10	0.55
2990	6.70112	7.27048	0.38954	0.99543	227 18 46	9.35	10.15	0.55
3000	6.66299	7.30823	0.38863	0.99552	227 37 24	9.29	10.19	0.54
3010	6.62466	7.34576	0.38771	0.99561	227 56 1	9.23	10.24	0.54
3020	6.58613	7.38307	0.38678	0.99569	228 14 38	9.17	10.28	0.54
3030	6.54740	7.42015	0.38584	0.99578	228 33 14	9.11	10.33	0.54
3040	6.50847	7.45701	0.38489	0.99587	228 51 50	9.06	10.37	0.54
3050	6.46934	7.49364	0.38392	0.99595	229 10 25	9.00	10.42	0.54
3060	6.43001	7.53004	0.38295	0.99604	229 29 0	8.94	10.46	0.53
3070	6.39049	7.56621	0.38197	0.99613	229 47 35	8.88	10.51	0.53
3080	6.35078	7.60215	0.38097	0.99621	230 6 9	8.81	10.55	0.53
3090	6.31087	7.63786	0.37996	0.99630	230 24 43	8.75	10.60	0.53
3100	6.27078	7.67334	0.37894	0.99638	230 43 16	8.69	10.64	0.53
3110	6.23050	7.70859	0.37791	0.99646	231 1 49	8.63	10.68	0.52
3120	6.19003	7.74360	0.37687	0.99655	231 20 21	8.57	10.72	0.52
3130	6.14937	7.77838	0.37581	0.99663	231 38 53	8.51	10.76	0.52
3140	6.10853	7.81292	0.37474	0.99671	231 57 24	8.45	10.81	0.52
3150	6.06750	7.84722	0.37366	0.99679	232 15 55	8.39	10.85	0.52
3160	6.02620	7.88128	0.37257	0.99687	232 34 25	8.33	10.89	0.51
3170	-5.98490	-7.91511	+0.37147	0.99695	232 52 55	+8.27	+10.93	-0.51

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 18

HELIOCENTRIC COÖRDINATES. 409

SATURN.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
3180	-5.94333	-7.94870	+0.37036	0.99703	233° 11' 25"	+8.20	+10.97	-0.51
3190	5.90158	7.98205	0.36924	0.99711	233 29 54	8.14	11.01	0.51
3200	5.85965	8.01515	0.36810	0.99719	233 48 23	8.08	11.05	0.51
3210	5.81754	8.04801	0.36695	0.99727	234 6 51	8.02	11.09	0.51
3220	5.77526	8.08063	0.36579	0.99734	234 25 19	7.95	11.13	0.50
3230	5.73281	8.11300	0.36462	0.99742	234 43 47	7.89	11.17	0.50
3240	5.69019	8.14513	0.36344	0.99750	235 2 14	7.83	11.20	0.50
3250	5.64740	8.17701	0.36225	0.99757	235 20 41	7.77	11.24	0.50
3260	5.60444	8.20865	0.36105	0.99765	235 39 7	7.70	11.28	0.50
3270	5.56131	8.24004	0.35984	0.99772	235 57 33	7.64	11.32	0.49
3280	5.51802	8.27119	0.35862	0.99780	236 15 58	7.58	11.36	0.49
3290	5.47456	8.30209	0.35739	0.99787	236 34 23	7.51	11.40	0.49
3300	5.43094	8.33274	0.35614	0.99794	236 52 48	7.45	11.43	0.49
3310	5.38716	8.36314	0.35488	0.99801	237 11 12	7.39	11.47	0.49
3320	5.34321	8.39328	0.35362	0.99809	237 29 36	7.32	11.50	0.48
3330	5.29910	8.42317	0.35235	0.99816	237 48 0	7.26	11.54	0.48
3340	-5.25484	-8.45281	+0.35106	0.99823	238 6 23	+7.19	+11.57	-0.48

URANUS.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
2960	-2.03189	+18.76705	+0.10020	1.27594	96° 10' 46"	+0.06	-0.53	0.00
3000	2.18950	18.74222	0.10214	1.27577	96 39 48	0.06	0.53	0.00
3040	2.34699	18.71613	0.10407	1.27561	97 8 51	0.07	0.53	0.00
3080	2.50433	18.68873	0.10600	1.27545	97 37 56	0.07	0.53	0.00
3120	2.66153	18.66002	0.10792	1.27530	98 7 3	0.08	0.53	0.00
3160	2.81851	18.63001	0.10984	1.27514	98 36 11	0.08	0.53	0.00
3200	2.97533	18.59870	0.11175	1.27498	99 5 20	0.08	0.53	0.00
3240	3.13197	18.56697	0.11364	1.27482	99 34 31	0.09	0.53	0.00
3280	3.28838	18.53211	0.11554	1.27467	100 3 43	0.09	0.53	0.00
3320	3.44458	18.49683	0.11743	1.27451	100 32 57	0.10	0.53	0.00
3360	-3.60054	+18.46022	+0.11930	1.27435	101 2 12	+0.10	-0.53	0.00

NEPTUNE.

Days from Epoch.	x .	y .	z .	Log Radius Vector.	Longitude in Orbit.	$-\frac{x^2}{r^3}x$.	$-\frac{x^2}{r^3}y$.	$-\frac{x^2}{r^3}z$.
2960	+29.1956	+6.1011	-0.8165	1.47476	11° 49' 0"	-0.28	-0.06	+0.01
3000	29.1690	6.2248	0.8183	1.47476	12 3.6	0.28	0.06	0.01
3040	29.1418	6.3485	0.8202	1.47475	12 18.2	0.28	0.06	0.01
3080	29.1141	6.4721	0.8220	1.47474	12 32.8	0.28	0.06	0.01
3120	29.0860	6.5956	0.8238	1.47474	12 47.4	0.28	0.06	0.01
3160	29.0573	6.7190	0.8256	1.47473	13 2.0	0.28	0.06	0.01
3200	29.0280	6.8423	0.8274	1.47473	13 16.6	0.28	0.06	0.01
3240	28.9982	6.9655	0.8292	1.47472	13 31.2	0.28	0.06	0.01
3280	28.9679	7.0886	0.8310	1.47471	13 45.8	0.28	0.07	0.01
3320	+28.9370	+7.2115	-0.8327	1.47471	14 0.4	-0.28	-0.07	+0.01

NOTE. — The Epoch is the 2400,000th day of the Julian Period = 1858, November 16.

410 HELIOCENTRIC COÖRDINATES.

INCLINATIONS AND NODES.				
Planets.	Inclination.	Increase in 100 Days.	Longitude of Ascending Node.	Increase in 100 Days.
Mercury	7° 0' 8.8"	+0.01952	46° 39' 20"	11.639
Venus	3° 23' 36.3"	+0.01195	75° 25' 35"	9.001
Mars	1° 51' 2.1"	—0.00586	48° 27' 42"	7.579
Jupiter	1° 18' 39.5"	—0.05689	99° 1' 38"	9.993
Saturn	2° 29' 21.2"	—0.03824	112° 24' 8"	8.570
Uranus	0° 46' 29.8"	+0.00834	73° 16' 44"	4.808
Neptune	1° 46' 29.0"		130° 12' 8"	
LOGARITHMS OF MASSES.				
Sun's = 1.				
Mercury, 93.3120	The Earth, 94.44985	Jupiter, 96.979689	Uranus, 95.60371	
Venus, 94.4069	Mars, 93.57176	Saturn, 96.45573	Neptune, 95.72630	

ECLIPSES IN 1867.

In the year 1867 there will be four Eclipses; two of the Sun, and two of the Moon.

I. An Annular Eclipse of the Sun, March 5, 1867, invisible at Washington, with the following elements:—

Washington mean time of δ in Right Ascension, March 5^d 17^h 4^m 46.1.

Sun's and Moon's R. A.	23 ^h 6 ^m 15.98	Hourly Motions	9.27 and 127.78
Sun's Declination	— 5° 45' 19.8	Hourly Motion	+ 0' 58.1
Moon's Declination	— 4 59 7.9	" "	+10 3.7
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 6.9
Moon's Equa. Hor. Par.	57 18.7	" "	15 36.3

From these elements may be deduced the following results:—

Eclipse begins on the Earth, March 5^d 14^h 8^m.4, Washington mean time, in longitude 297° 54'.4 West from Washington, and in latitude 12° 42'.6 North.

Central Eclipse begins on the Earth 15^h 28^m.0, in longitude 315° 17'.1 West from Washington, and in latitude 33° 32'.5 North.

Central Eclipse at Noon 17^h 4^m.8, in longitude 253° 18'.1 West from Washington, and in latitude 48° 29'.5 North.

Central Eclipse ends on the Earth 17^h 48^m.4, in longitude 188° 2'.8 West from Washington, and in latitude 67° 17'.6 North.

Eclipse ends on the Earth 19^h 8^m.0, in longitude 200° 12'.7 West from Washington, and in latitude 46° 48'.6 North.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m				9.99	9.99	—9.02	—8.98	
14 0	—1.58968	+0.87455	—0.23573	7558	7974	4675	4404	207° 5' 57.2
14 10	1.50367	0.90099	0.20928	7561	7976	4488	4198	209 35 59.4
14 20	1.41765	0.92743	0.18282	7563	7978	4301	3993	212 6 1.6
14 30	1.33163	0.95386	0.15636	7565	7980	4114	3787	214 36 3.8
14 40	1.24561	0.98030	0.12990	7567	7982	3927	3582	217 6 6.0
14 50	1.15958	1.00673	0.10344	7569	7984	3739	3376	219 36 8.2
15 0	1.07355	1.03316	0.07698	7571	7986	3552	3170	222 6 10.4
15 10	0.98752	1.05960	0.05052	7573	7988	3364	2964	224 36 12.5
15 20	0.90149	1.08603	—0.02405	7575	7990	3177	2758	227 6 14.7
15 30	—0.81545	+1.11246	+0.00242	7577	7992	2989	2552	229 36 16.9

ANNULAR ECLIPSE

OF

MARCH 5, 1867.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
^h ^m				9.99	9.99	-9.02	-8.98	
15 40	-0.72941	+1.13890	+0.02888	7580	7994	2801	2346	232° 6' 19.1
15 50	0.64337	1.16533	0.05535	7582	7996	2614	2139	234 36 21.3
16 0	0.55732	1.19176	0.08182	7584	7997	2426	1933	237 6 23.5
16 10	0.47128	1.21820	0.10829	7586	7999	2238	1726	239 36 25.7
16 20	0.38523	1.24463	0.13476	7588	8001	2050	1519	242 6 27.9
16 30	0.29918	1.27106	0.16123	7590	8003	1861	1313	244 36 30.1
16 40	0.21313	1.29750	0.18770	7592	8005	1673	1106	247 6 32.3
16 50	0.12708	1.32393	0.21417	7594	8007	1485	0899	249 36 34.5
17 0	-0.04103	1.35036	0.24064	7596	8009	1296	0692	252 6 36.8
17 10	+0.04502	1.37680	0.26711	7598	8011	1108	0485	254 36 39.0
17 20	0.13107	1.40323	0.29359	7600	8013	0919	0277	257 6 41.2
17 30	0.21713	1.42966	0.32007	7603	8015	0731	*070	259 36 43.4
17 40	0.30318	1.45609	0.34655	7605	8017	0542	9862	262 6 45.6
17 50	0.38923	1.48252	0.37303	7607	8018	0353	9655	264 36 47.8
18 0	0.47528	1.50895	0.39951	7609	8020	*164	9447	267 6 50.0
18 10	0.56133	1.53539	0.42599	7611	8022	9975	9239	269 36 52.2
18 20	0.64738	1.56182	0.45248	7613	8024	9786	9031	272 6 54.4
18 30	0.73342	1.58825	0.47897	7615	8026	9596	8823	274 36 56.6
18 40	0.81947	1.61468	0.50546	7617	8028	9407	8615	277 6 58.8
18 50	0.90551	1.64111	0.53195	7619	8030	9218	8407	279 37 1.0
19 0	0.99155	1.66754	0.55844	7621	8032	9028	8198	282 7 3.2
19 10	+1.07759	+1.69397	+0.58493	7624	8034	8838	7990	284 37 5.4

FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
^h ^m			^h ^m		
15 20	+0.54012	+0.52186	16 40	+0.75158	+0.73361
15 30	0.56655	0.54833	16 50	0.77801	0.76008
15 40	0.59299	0.57479	17 0	0.80444	0.78656
15 50	0.61942	0.60126	17 10	0.83088	0.81303
16 0	0.64585	0.62773	17 20	0.85731	0.83951
16 10	0.67229	0.65420	17 30	0.88374	0.86599
16 20	0.69872	0.68067	17 40	0.91017	0.89247
16 30	+0.72515	+0.70714	17 50	+0.93660	+0.91895

A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically increasing log E and decreasing log F by 0.000001, and by numerically decreasing log G by 0.000094 and increasing log H by 0.000103.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h ^m						
14 0	+8601.0	+2643.5	+2645.5	+143.35	+44.06	+44.09
14 30	8602.1	2643.5	2645.9	143.37	44.06	44.10
15 0	8603.0	2643.4	2646.2	143.38	44.06	44.10
15 30	8603.7	2643.4	2646.6	143.39	44.06	44.11
16 0	+8604.3	+2643.3	+2646.9	+143.40	+44.06	+44.11

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h ^m 16 30	+8604.7	+2643.3	+2647.2	+143.41	+44.05	+44.12
17 0	8605.0	2643.2	2647.5	143.42	44.05	44.12
17 30	8605.0	2643.2	2647.9	143.42	44.05	44.13
18 0	8604.8	2643.2	2648.2	143.41	44.05	44.14
18 30	8604.4	2643.2	2648.6	143.41	44.05	44.14
19 0	8603.7	2643.2	2649.0	143.39	44.05	44.15
19 30	+8602.8	+2643.2	+2649.4	+143.38	+44.05	+44.16

II. A Partial Eclipse of the Moon, March 19, 1867, visible at Washington, with the following elements :—

Washington mean time of δ in Right Ascension, March 19 ^d 15 ^h 20 ^m 30.5.

Sun's Right Ascension	^h ^m ^s 23 57 22.62	Hourly Motion	^s 9.11
Moon's Right Ascension	11 57 22.62	" "	125.69
Sun's Declination	—0° 17' 4.2	Hourly Motion	+ 0' 59.2
Moon's Declination	+0 50 54.9	" "	—10 19.7
Sun's Equa. Hor. Par.	8.6	True Semidiameter	16 3.3
Moon's Equa. Hor. Par.	57 2.5	" "	15 31.9

From these elements may be deduced the following results :—

Moon enters Penumbra, March 19 ^d 12 ^h 56.8 Washington mean time.

Moon enters Shadow	19 14 7.4	" "
Middle of the Eclipse	19 15 40.7	" "
Moon leaves Shadow	19 17 14.1	" "
Moon leaves Penumbra	19 18 24.7	" "

First contact of Shadow with Moon's limb 142° from north point towards the East, when the Moon is in the zenith, in longitude 30° 30' West from Washington, and in latitude 1° 4' North.

Last contact of Shadow with Moon's limb 106° from north point towards the West, when the Moon is in the zenith, in longitude 75° 40' West from Washington, and in latitude 0° 32' North.

Magnitude of the Eclipse = 0.813 (Moon's diameter = 1).

III. A Total Eclipse of the Sun, August 28, 1867, invisible at Washington, with the following elements :—

Washington mean time of δ in Right Ascension, August 28 ^d 20 ^h 28 ^m 56.3

Sun's and Moon's R. A.	^h ^m ^s 10 30 1.24	Hourly Motions	^s 9.12 and 139.68
Sun's Declination	+9° 25' 29.3	Hourly Motion	— 0' 53.4
Moon's Declination	+8 36 23.1	" "	—10 7.9
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 50.8
Moon's Equa. Hor. Par.	59 33.0	" "	16 12.8

From these elements may be deduced the following results :—

Eclipse begins on the Earth, August 28^d 17^h 44^m.8, Washington mean time, in longitude 353° 26.4 West from Washington, and in latitude 14° 57.4 South.

Central Eclipse begins on the Earth $19^h 0^m.5$, in longitude $7^\circ 55.6$ West from Washington, and in latitude $36^\circ 17.8$ South.

Central Eclipse at Noon $20^h 28^m.9$, in longitude $307^\circ 1.2$ West from Washington, and in latitude $46^\circ 39.3$ South.

Central Eclipse ends on the Earth $21^h 8^m.7$, in longitude $249^\circ 52.2$ West from Washington, and in latitude $67^\circ 3.2$ South.

Eclipse ends on the Earth $22^h 24^m.5$, in longitude $255^\circ 54.2$ West from Washington, and in latitude $46^\circ 29.1$ South.

DATA FOR COMPUTING THE ECLIPSE FOR ANY PLACE, FOR PENUMBRA.

Wash. M. Time.	A.	B.	C.	log E.	log F.	log G.	log H.	μ
$h\ m$				9.99	9.99	+9.20	+9.22	
17 40	-1.52967	+0.15157	-0.92702	4379	3708	3898	8031	264 46 21.8
17 50	1.43914	0.12562	0.95302	4382	3711	3785	7924	267 16 24.4
18 0	1.34860	0.09967	0.97901	4385	3714	3673	7818	269 46 27.0
18 10	1.25806	0.07872	1.00501	4388	3718	3560	7711	272 16 29.6
18 20	1.16752	0.04777	1.03100	4391	3721	3447	7605	274 46 32.2
18 30	1.07697	+0.02182	1.05699	4394	3724	3335	7498	277 16 34.8
18 40	0.98643	-0.00413	1.08299	4397	3727	3222	7392	279 46 37.4
18 50	0.89588	0.03008	1.10899	4400	3730	3109	7285	282 16 40.0
19 0	0.80533	0.05604	1.13498	4403	3733	2996	7179	284 46 42.7
19 10	0.71478	0.06199	1.16098	4406	3736	2883	7072	287 16 45.3
19 20	0.62423	0.10794	1.18697	4409	3739	2770	6965	289 46 47.9
19 30	0.53368	0.13390	1.21296	4412	3743	2657	6858	292 16 50.5
19 40	0.44313	0.15985	1.23896	4414	3746	2544	6752	294 46 53.1
19 50	0.35258	0.18581	1.26496	4417	3749	2431	6645	297 16 55.7
20 0	0.26203	0.21177	1.29095	4420	3752	2318	6538	299 46 58.3
20 10	0.17148	0.23773	1.31695	4423	3755	2205	6431	302 17 1.0
20 20	-0.08093	0.26369	1.34294	4426	3758	2091	6324	304 47 3.6
20 30	+0.00961	0.28965	1.36893	4429	3761	1978	6217	307 17 6.2
20 40	0.10015	0.31561	1.39493	4432	3765	1865	6110	309 47 8.8
20 50	0.19069	0.34158	1.42093	4435	3768	1752	6003	312 17 11.4
21 0	0.28123	0.36755	1.44692	4438	3771	1638	5896	314 47 14.0
21 10	0.37177	0.39352	1.47292	4441	3774	1525	5789	317 17 16.6
21 20	0.46230	0.41949	1.49891	4444	3777	1411	5682	319 47 19.3
21 30	0.55283	0.44546	1.52490	4447	3780	1298	5575	322 17 21.9
21 40	0.64336	0.47143	1.55090	4450	3783	1184	5468	324 47 24.5
21 50	0.73388	0.49741	1.57690	4453	3786	1071	5361	327 17 27.1
22 0	0.82440	0.52339	1.60289	4456	3789	0957	5254	329 47 29.7
22 10	0.91492	0.54937	1.62889	4459	3792	0844	5146	332 17 32.3
22 20	1.00543	0.57535	1.65489	4462	3796	0730	5039	334 47 34.9
22 30	+1.09594	-0.60133	-1.68088	4465	3799	0617	4932	337 17 37.6

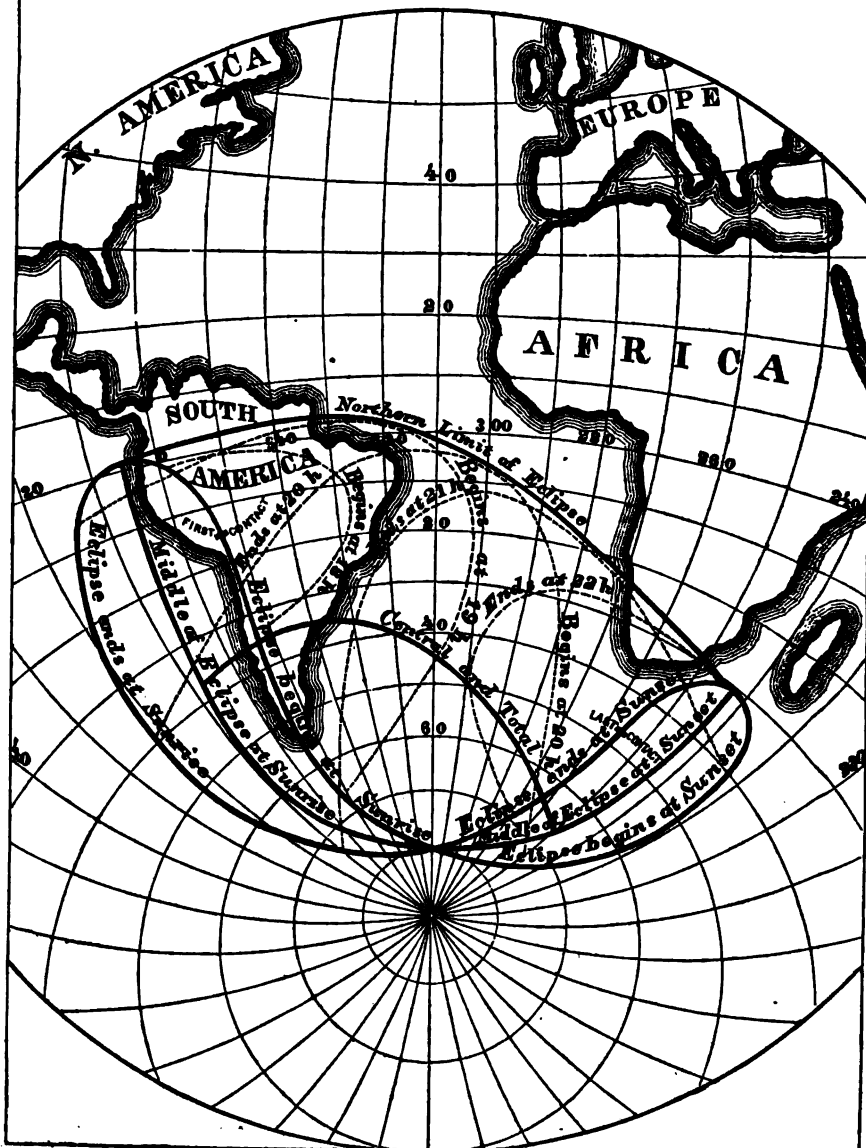
FOR SHADOW.

Washington Mean Time.	B.	C.	Washington Mean Time.	B.	C.
$h\ m$			$h\ m$		
19 0	-0.60187	-0.58915	20 10	-0.78356	-0.77112
19 10	0.62782	0.61515	20 20	0.80952	0.79711
19 20	0.65377	0.64114	20 30	0.83548	0.82310
19 30	0.67973	0.66713	20 40	0.86144	0.84910
19 40	0.70568	0.69313	20 50	0.88741	0.87509
19 50	0.73164	0.71913	21 0	0.91338	0.90108
20 0	-0.75760	-0.74512	21 10	-0.93935	-0.92708

TOTAL ECLIPSE

— OF —

AUG. 28, 1867.



A and μ are given in the Table for Penumbra, and the values of log E, log F, log G, and log H may be obtained from corresponding values for Penumbra, by numerically decreasing log E and increasing log F by 0.000002, and by numerically increasing log G and decreasing log H by 0.000060.

CHANGES OF THE QUANTITIES IN THE TABLES OF DATA.

Washington Mean Time.	For one Minute.			For one Second.		
	A.	B.	C.	A'.	B'.	C'.
^h ^m 17 30	+9052.8	—2595.2	—2599.5	+150.88	—43.25	—43.32
18 0	9053.7	2595.2	2599.5	150.89	43.25	43.32
18 30	9054.3	2595.3	2599.5	150.90	43.25	43.32
19 0	9054.7	2595.4	2599.5	150.91	43.26	43.32
19 30	9054.8	2595.6	2599.5	150.91	43.26	43.32
20 0	9054.7	2595.9	2599.5	150.91	43.26	43.32
20 30	9054.3	2596.3	2599.5	150.90	43.27	43.32
21 0	9053.6	2596.8	2599.5	150.89	43.28	43.33
21 30	9052.7	2597.3	2599.5	150.88	43.29	43.33
22 0	9051.7	2597.8	2599.6	150.86	43.30	43.33
22 30	+9050.6	—2598.3	—2599.7	+150.84	—43.30	—43.33

IV. A Partial Eclipse of the Moon, September 13, 1867, partially visible at Washington, with the following elements:—

Washington mean time of δ in Right Ascension, September 13 ^d ^h ^m 6 55 44.2.

Sun's Right Ascension	11 ^h 25 ^m 47.56	Hourly Motion	^s 8.98
Moon's Right Ascension	23 25 47.56	" "	123.26
Sun's Declination	+3° 41' 28".8	Hourly Motion	— 0' 57".5
Moon's Declination	—4 18 20.2	" "	+ 9 56.6
Sun's Equa. Hor. Par.	8.5	True Semidiameter	15 54.6
Moon's Equa. Hor. Par.	56 22.9	" "	15 21.1

From these elements may be deduced the following results:—

Moon enters Penumbra, September 13	^d ^h ^m 4 34.6	Washington mean time.
Moon enters Shadow	13 5 48.5	" "
Middle of the Eclipse	13 7 18.0	" "
Moon leaves Shadow	13 8 47.5	" "
Moon leaves Penumbra	13 10 1.3	" "

First contact of Shadow with Moon's limb 34° from north point towards the East, when the Moon is in the zenith, in longitude 268° 42' West from Washington, and in latitude 4° 31' South.

Last contact of Shadow with Moon's limb 69° from north point towards the West, when the Moon is in the zenith, in longitude 312° 4' West from Washington, and in latitude 4° 1' South.

Magnitude of the Eclipse = 0.704 (Moon's diameter = 1).

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
Jan. 1	γ Libras	6	+44	-18	h m s	h m s						
1	δ Libras	4½	+74	+28	3 3.0	+ 6 10 27	+0.3028	0.5365	-.1033	-9.4198	9.9844	
1	49 Libras	5½	+74	+28	7 52.3	+10 50 51	+1.0217	.5374	-.0973	-9.4491	.9821	
2	φ Ophiuchj	5	+56	- 6	11 9.4	- 9 58 5	+0.4976	.5383	-.0933	-9.4439	.9836	
2	24 Scorpii	5	- 8	-74	2 18.1	+ 4 42 25	-0.5623	.5417	-.0732	-9.4486	.9821	
2			+45	-13	7 22.3	+ 9 37 9	+0.3762	.5431	-.0658	-9.4776	.9795	
2	VENUS		+27	-30	12 30.2	- 9 24 39	+0.0828	.5440	-.0622	-9.4781	.9794	
2	B.A.C. 5695		-42	-90	14 25.8	- 7 32 40	-1.0445	.5446	-.0557	-9.4556	.9815	
2	20 Ophiuchi		+72	+39	17 12.5	- 4 51 13	+1.1345	.5451	-.0520	-9.5056	.9765	
2	B.A.C. 5771	6½	- 3	-62	20 21.2	- 1 49 29	-0.4133	.5459	-.0474	-9.4764	.9796	
3	B.A.C. 5839	6½	- 6	-65	1 57.3	+ 3 36 57	-0.4521	.5471	-.0388	-9.4808	.9791	
6	β Capricor.	3	- 9	-79	16 23.7	- 8 43 53	-0.6974	.5505	+0.0930	-9.4185	.9845	
6	B A.C. 7063	6	+33	-27	20 44.1	- 4 31 51	+0.1401	.5498	+0.1001	-9.4268	.9839	
7	τ¹ Capricor.	6	+67	0	0 13.0	- 1 9 41	+0.6145	.5494	+0.1046	-9.4217	.9837	
7	τ² Capricor.	5	+58	- 6	1 8.7	- 0 15 44	+0.5096	.5492	+0.1058	-9.4247	.9841	
7	8 Aquarii	6	+ 6	-59	11 6.7	+ 9 22 9	-0.3874	.5482	+0.1185	-9.3702	.9877	
7	9 Aquarii	6	+39	-23	11 41.4	+ 9 56 44	+0.2089	.5482	+0.1193	-9.3851	.9868	
7	18 Aquarii	6	+77	+22	22 49.9	- 3 16 5	+0.9526	.5468	+0.1322	-9.3665	.9879	
8	λ Capricor.	5½	+78	+15	9 41.4	+ 7 14 48	+0.8626	.5456	+0.1436	-9.3171	.9904	
8	B.A.C. 7620	6	+45	-21	13 8.6	+10 35 22	+0.2404	.5453	+0.1468	-9.2781	.9920	
9	δ Aquarii	4½	- 8	-90	0 28.1	- 2 26 35	-0.7137	.5441	+0.1569	-9.1669	.9952	
9	B.A.C. 7774	6	+75	+ 1	0 29.2	- 2 25 27	+0.6375	.5441	+0.1569	-9.2267	.9937	
9	ε Aquarii	5½	+10	-60	2 6.9	- 0 50 54	-0.4077	.5441	+0.1582	-9.1691	.9952	
9	67 Aquarii	6	+67	- 5	13 20.8	+10 1 46	+0.5283	.5441	+0.1662	-9.1247	.9961	
10	B.A.C. 8094	6	+10	-61	5 6.6	+ 1 17 47	-0.4285	.5442	+0.1750	-8.8665	.9988	
10	B.A.C. 8134	6½	+85	+58	7 54.9	+ 4 0 43	+1.3098	.5445	+0.1763	-8.9736	.9981	
10	11 Piscium	6½	-27	-90	11 50.9	+ 7 49 16	-1.0373	.5447	+0.1777	-8.6437	.9996	
10	14 Piscium	6½	-42	-90	14 6.9	+10 0 59	-1.2031	.5450	+0.1784	-8.5389	.9997	
11	B.A.C. 8311	6½	-12	-90	0 4.4	+ 4 20 35	-0.8201	.5465	+0.1811	-8.0422	0.0000	
11	B.A.C. 8365	6½	+89	+ 5	5 0.4	+ 0 25 55	+0.7078	.5473	+0.1819	-8.3360	0.0009	
11	B.A.C. 57	6½	+ 8	-65	11 4.8	+ 6 18 35	-0.4795	.5488	+0.1823	+8.2189	.9999	
11	44 Piscium	6	+30	-39	14 42.3	+ 9 49 2	-0.0834	.5497	+0.1823	+8.3919	.9999	
12	73 Piscium	6½	+ 1	-76	9 12.3	+ 3 42 42	-0.6107	.5558	+0.1794	+8.0352	.9984	
12	77 Pisc. pr.	7	+48	-21	9 38.9	+ 4 8 25	+0.2370	.5560	+0.1792	+8.2645	.9988	
12	ε Piscium	5½	+ 6	-67	10 50.5	+ 5 17 38	-0.3208	.5564	+0.1788	+8.9354	.9984	
12	88 Piscium	6½	-41	-84	13 44.2	+ 8 5 37	-1.1937	.5577	+0.1778	+9.0397	.9974	
12	96 Piscium	6½	+15	-55	20 18.3	- 9 33 33	-0.3589	.5604	+0.1749	+9.0609	.9971	
12	μ Piscium	4½	+90	+19	20 48.5	- 9 4 22	+0.9139	.5607	+0.1745	+9.9780	.9980	
12	B.A.C. 481	6½	+25	-43	23 28.8	- 6 29 23	-0.1723	.5619	+0.1731	+9.0836	.9968	
13	ο Piscium	4	-25	-82	3 40.7	- 2 26 17	-1.0120	.5642	+0.1706	+9.1690	.9952	
13	ξ¹ Ceti	4½	+90	+62	15 57.8	+ 9 25 19	+1.3029	.5706	+0.1616	+8.1553	.9955	
13	B.A.C. 726	6½	+33	-33	20 25.1	-10 16 50	-0.0315	.5731	+0.1575	+9.9494	.9930	
13	B.A.C. 741	6½	+90	+45	21 0.0	- 9 43 10	+1.1948	.5733	+0.1571	+9.1995	.9945	
13	ξ Arietis	5½	+53	-14	21 6.5	- 9 36 51	+0.3042	.5733	+0.1570	+9.2399	.9934	
13	B.A.C. 755	6	+66	- 4	21 57.2	- 8 47 57	+0.4798	.5738	+0.1562	+9.2380	.9934	
14	31 Arietis	5½	-11	-78	2 10.9	- 4 43 22	-0.8037	.5761	+0.1520	+9.3132	.9906	
14	B.A.C. 690	6	+90	+65	4 44.4	- 2 15 22	+1.3093	.5778	+0.1492	+9.2470	.9931	
14	38 Arietis	5	+19	-46	5 46.0	- 1 16 1	-0.2794	.5782	+0.1481	+9.3137	.9906	
14	B.A.C. 987	6½	+81	+ 7	16 56.0	+ 9 29 31	+0.6359	.5849	+0.1345	+9.3367	.9845	
14	Wei. III. 1085	8	+90	+40	14 32.5	+ 6 16 52	+1.0723	.5979	+0.1016	+9.4032	.9856	
15	B.A.C. 1272	6	-35	-73	16 0.4	+ 7 41 23	-1.0995	.5985	+0.0992	+9.4654	.9806	
15	Lal. 7671	8	-29	-73	16 16.2	+ 7 56 31	-1.0309	.5987	+0.0989	+9.4644	.9808	
15	Lal. 7702	9½	-17	-73	16 33.8	+ 8 13 27	-0.8722	.5990	+0.0980	+9.4611	.9811	
15	Weis. IV. 24	9	+90	+43	17 7.7	+ 8 46 1	+1.1008	.5991	+0.0973	+9.4098	.9852	
15	Lal. 77553	7½	+60	- 2	17 12.3	+ 8 50 29	+0.3995	.5991	+0.0972	+9.4295	.9837	
15	B.A.C. 1281	7	+18	-42	17 14.9	+ 8 52 55	-0.2957	.5991	+0.0971	+9.4481	.9822	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
Jan. 15	Rumk. 1103	7	+90 ^c	+16 ^c	^{h m} 17 18.7	+ 8 56 35	+0.7274	.5991	+.0971	+9.4208	9.9844	
15	Rumk. 1110		-17	-73	17 48.9	+ 9 25 46	-0.8734	.5995	+.0960	+9.4642	.9808	
15	48 Tauri	6	+90	+45	19 8.7	+10 42 21	+1.1158	.6001	+.0938	+9.4148	.9848	
15	Rumk. 1136	6	+56	- 5	19 33.0	+11 5 43	+0.3381	.6005	+.0928	+0.4371	.9831	
15	Lal. 8031	9	-46	-73	20 14.6	+11 45 40	-1.1945	.6008	+.0918	+9.4777	.9795	
15	γ Tauri	4	+90	+37	20 44.4	-11 45 43	+1.0242	.6010	+.0907	+0.4215	.9843	
15	55 Tauri	7	+42	-16	20 46.2	-11 43 57	+0.1337	.6010	+.0907	+9.4455	.9824	
15	Rumk. 1161		-16	-73	21 21.8	-11 9 44	-0.8668	.6016	+.0894	+0.4722	.9800	
15	Rumk. 1163	8	+29	-29	21 24.9	-11 6 50	-0.0949	.6016	+.0893	+9.4529	.9818	
15	δ Tauri	4	-11	-73	21 56.9	-10 36 4	-0.7849	.6016	+.0886	+9.4715	.9801	
15	63 Tauri	6	+34	-24	22 9.3	-10 24 8	-0.0668	.6016	+.0894	+0.4524	.9818	
15	B.A.C. 1351	6½	+43	-15	22 10.7	-10 22 47	+0.1430	.6016	+.0883	+9.4486	.9821	
15	δ Tauri	6	- 3	-67	22 24.6	-10 9 26	-0.6500	.6020	+.0875	+9.4632	.9803	
15	Lal. 8249	7½	+19	-40	22 31.3	-10 2 59	-0.2782	.6021	+.0873	+9.4601	.9811	
15	Lal. 8256	8	+30	-28	22 33.8	-10 0 39	-0.0813	.6021	+.0873	+9.4552	.9816	
15	δ Tauri	5	-34	-73	22 57.1	- 9 36 11	-1.0894	.6021	+.0868	+9.4811	.9791	
15	70 Tauri	7	+90	+29	23 2.7	- 9 32 50	+0.8989	.6023	+.0866	+9.4305	.9836	
15	Rumk. 1189		+35	-23	23 20.1	- 9 16 7	+0.0123	.6023	+.0868	+9.4445	.9816	
15	71 Tauri	6	+90	+61	23 20.2	- 9 16 1	+1.2434	.6023	+.0862	+9.4217	.9843	
15	Rumk. 1192		+18	-40	23 22.9	- 9 13 29	-0.2633	.6026	+.0857	+9.4622	.9809	
16	Rumk. 1203		+81	+11	0 7.0	- 8 31 6	+0.6239	.6027	+.0846	+9.4403	.9828	
16	75 Tauri	6	+75	+ 8	0 9.4	- 8 28 47	+0.5700	.6027	+.0846	+9.4419	.9827	
16	δ Tauri	4½	+90	+34	0 12.6	- 8 25 39	+0.5678	.6027	+.0845	+9.4313	.9836	
16	δ Tauri	4½	+90	+41	0 14.9	- 8 23 28	+1.0617	.6027	+.0844	+9.4288	.9838	
16	Rumk. 1210		+90	+21	0 22.2	- 8 16 27	+0.7834	.6028	+.0841	+9.4367	.9831	
16	Rumk. 1212	6	+ 1	-49	0 28.9	- 8 10 3	-0.5876	.6028	+.0839	+9.4790	.9800	
16	Rumk. 1214		-19	-73	0 32.3	- 8 6 45	-0.8991	.6029	+.0838	+9.4797	.9793	
16	Rumk. 1215	7	-21	-73	0 32.9	- 8 6 14	-0.9287	.6029	+.0838	+9.4804	.9792	
16	B.A.C. 1391	5	+90	+22	0 59.4	- 7 40 43	+0.7965	.6031	+.0830	+9.4377	.9831	
16	B.A.C. 1394	7	+90	+25	1 4.8	- 7 35 36	+0.8431	.6031	+.0829	+9.4366	.9831	
16	Rumk. 1227	7	+90	+55	1 18.9	- 7 21 59	+1.1973	.6032	+.0823	+9.4276	.9839	
16	85 Tauri	6	+90	+52	1 30.6	- 7 10 42	+1.1763	.6033	+.0819	+9.4286	.9838	
16	Rumk. 1232		+64	+ 2	1 42.0	- 6 59 49	+0.4464	.6034	+.0815	+9.4484	.9821	
16	Rumk. 1233		-12	-73	1 47.7	- 6 54 23	-0.8028	.6034	+.0813	+9.4799	.9793	
16	Rumk. 1235		+90	+40	1 43.3	- 6 58 59	+1.0503	.6035	+.0812	+9.4328	.9835	
16	B.A.C. 1406	7	+90	+20	2 12.3	- 6 30 42	+0.7575	.6037	+.0804	+9.4414	.9828	
16	Rumk. 1238	10	+78	+10	2 31.6	- 6 12 8	+0.5852	.6038	+.0803	+9.4463	.9823	
16	Lal. 8599	9	- 2	-65	2 35.4	- 6 8 30	-0.6350	.6039	+.0799	+9.4774	.9795	
16	Lal. 8610	8	+42	-16	2 43.1	- 6 1 9	+0.1216	.6039	+.0797	+9.4589	.9812	
16	Lal. 8613	8	+30	-27	2 44.3	- 5 59 58	-0.0778	.6040	+.0796	+9.4640	.9808	
16	α Tauri	1	+82	+12	3 5.9	- 5 39 18	+0.6311	.6041	+.0789	+9.4466	.9823	
16	89 Tauri	7	+90	+52	3 59.2	- 4 48 0	+1.1727	.6046	+.0771	+9.4340	.9833	
16	Rumk. 1241		+90	+19	4 39.7	- 4 9 10	+0.7337	.6050	+.0759	+9.4470	.9823	
16	Rumk. 1243	8	+90	+20	4 51.8	- 3 57 31	+0.7547	.6051	+.0755	+9.4469	.9823	
16	Rumk. 1246	7	+28	-28	5 17.4	- 3 22 54	-0.1088	.6053	+.0747	+9.4696	.9802	
16	Rumk. 1247		+78	+11	5 17.8	- 3 22 26	+0.5931	.6053	+.0747	+9.4519	.9818	
16	Rumk. 1254		+82	+13	5 32.7	- 3 18 16	+0.6342	.6055	+.0742	+9.4518	.9819	
16	Lal. 8852	9½	+36	-20	5 51.1	- 3 0 34	+0.0272	.6056	+.0736	+9.4673	.9805	
16	Rumk. 1276		-30	-72	7 27.0	- 1 28 33	-1.0380	.6062	+.0702	+9.4856	.9776	
16	B.A.C. 1478	6	-53	-72	8 3.2	- 0 53 47	-1.2337	.6065	+.0690	+9.5011	.9770	
16	Rumk. 1283		+90	+26	8 5.6	- 0 51 27	+0.8408	.6065	+.0690	+9.4507	.9820	
16	Rumk. 1299	7½	+27	-29	9 18.8	+ 0 18 51	-0.1320	.6070	+.0665	+9.4771	.9795	
16	Rumk. 1300		+30	-26	9 21.0	+ 0 20 59	-0.0773	.6070	+.0664	+9.4759	.9797	
16	Rumk. 1301	6	-61	-72	9 21.9	+ 0 21 47	-1.2682	.6070	+.0664	+9.5039	.9767	
16	Rumk. 1302	7	-45	-72	9 22.4	+ 0 22 18	-1.1800	.6070	+.0664	+9.5020	.9769	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of Conj.	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
					h m s	h m s						
Jan. 16	B.A.C. 1526	6	+71	+8	11 28.6	+ 2 23 29	+0.5237	0.6080	+0.622	+9.4645	9.9808	
16	m Tauri	5½	-10	-72	15 19.5	+ 6 5 3	-0.7600	.6091	+0.548	+9.5006	9.770	
16	111 Tauri	6	+90	+23	21 55.1	-11 35 21	+0.7495	.6116	+0.408	+9.4722	9.800	
16	115 Tauri	5½	+47	-7	22 58.5	-10 34 32	+0.2100	.6118	+0.385	+9.4663	9.786	
16	117 Tauri	6	+90	+36	23 19.2	-10 14 36	+0.9352	.6118	+0.380	+9.4600	9.803	
17	119 Tauri	5½	+14	-40	0 54.0	- 8 43 43	-0.3605	.6123	+0.344	+9.5013	9.770	
17	B.A.C. 1728	6	+90	+55	0 56.6	- 8 41 12	+1.1623	.6125	+0.343	+9.4648	9.807	
17	120 Tauri	6½	+18	-36	1 24.3	- 8 14 35	-0.2042	.6125	+0.330	+9.5001	9.771	
17	122 Tauri	6	+90	+63	2 47.5	- 6 54 48	+1.2210	.6128	+0.302	+9.4648	9.867	
17	130 Tauri	6	+80	+17	6 45.0	- 3 6 57	+0.6109	.6136	+0.216	+9.4823	9.790	
17	B.A.C. 1930	6½	+90	+24	12 40.8	+ 2 34 15	+0.7135	.6145	+0.086	+9.4820	9.790	
17	71 Orionis	5½	-12	-71	17 11.4	+ 6 53 49	-0.7865	.6147	-0.012	+9.5169	9.761	
18	26 Geminor.	5½	+67	+9	3 43.9	- 6 59 39	+0.4852	.6146	-0.247	+9.4846	9.784	
18	2 Geminor.	3½	+90	+34	17 26.7	+ 6 9 36	+0.9287	.6122	-0.544	+9.4603	9.811	
18	B.A.C. 2432	6½	-20	-72	19 20.1	+ 7 58 26	-0.9078	.6118	-0.578	+9.5120	9.769	
18	68 Geminor.	5½	+90	+60	23 27.4	+11 55 45	+1.2280	.6104	-0.668	+9.4432	9.826	
19	f Geminor.	6	-10	-72	1 41.9	- 9 55 10	-0.7741	.6097	-0.712	+9.4893	9.783	
19	1 Cancri	6	+69	+5	8 34.9	- 3 18 41	+0.5070	.6069	-0.0847	+9.4440	9.826	
19	3 Cancri	6	-39	-73	10 2.6	- 1 54 26	-1.1361	.6063	-0.873	+9.4821	9.790	
19	5 Cancri	6	+17	-42	10 20.5	- 1 37 16	-0.3167	.6060	-0.876	+9.4614	9.810	
19	B.A.C. 2731	6½	-47	-73	13 41.4	+ 1 35 40	-1.2034	.6045	-0.941	+9.4757	9.797	
19	29 Cancri	6	+90	+19	21 9.1	+ 8 45 53	+0.7889	.6009	-1.071	+9.4129	9.856	
20	ξ Leonis	6	+49	-16	23 14.1	+ 9 51 31	+0.2466	.5853	-1.446	+9.3137	9.906	
21	α Leonis	3½	+90	+35	3 9.8	-10 21 22	+1.0752	.5826	-1.493	+9.2603	9.927	
21	18 Leonis	6	-44	-78	5 21.9	- 8 14 3	-1.2056	.5808	-1.519	+9.3326	9.867	
21	B.A.C. 3345	6	-18	-78	5 52.3	- 7 44 47	-0.8999	.5806	-1.523	+9.3193	9.904	
21	B.A.C. 3398	6	+90	+30	9 43.6	- 4 1 49	+1.0219	.5781	-1.562	+9.2202	9.939	
21	α Leonis	5	-15	-80	14 41.9	+ 0 45 49	-0.8710	.5749	-1.608	+9.2665	9.925	
21	B.A.C. 3538	6½	-15	-81	21 0.8	+ 6 51 21	-0.8698	.5710	-1.658	+9.2234	9.938	
21	44 Leonis	6	-18	-81	22 21.0	+ 8 8 48	-0.9164	.5702	-1.668	+9.2156	9.941	
21	B.A.C. 3562	6½	-19	-81	22 30.3	+ 8 17 44	-0.9311	.5699	-1.670	+9.2151	9.941	
22	43 Leonis	6	+48	-20	2 38.2	-11 42 56	+0.2268	.5673	-1.697	+9.1233	9.961	
22	37 Sextantis	6	+31	-36	7 43.5	- 6 48 7	-0.0649	.5640	-1.727	+9.0902	9.967	
22	c Leonis	5	-22	-83	14 24.8	- 0 20 23	-0.674	.5600	-1.759	+9.0741	9.969	
23	τ Leonis	5	+42	-27	3 3.6	+11 53 13	+0.1251	.5534	-1.797	+8.7962	9.992	
23	89 Leonis	6	-1	-80	6 6.2	- 9 10 6	-0.6425	.5517	-1.812	+8.8209	9.990	
23	β Virginis	3½	-4	-86	13 48.3	- 1 42 55	-0.6926	.5482	-1.808	+8.6417	9.996	
23	B.A.C. 4043	6½	+28	-41	17 52.4	+ 2 13 19	-0.1239	.5459	-1.808	+8.3453	9.999	
24	13 Virginis	6	+9	-63	3 22.4	+11 25 16	-0.4401	.5424	-1.798	+6.9328	0.0000	
24	γ Virginis	3½	-4	-86	3 58.9	-11 59 24	-0.6860	.5424	-1.798	+7.0945	0.0000	
24	38 Virginis	6	+5	-68	20 22.5	+ 3 53 42	-0.5172	.5372	-1.750	+8.6935	9.995	
24	ε Virginis	6	-11	-90	23 34.5	+ 6 59 48	-0.7054	.5364	-1.737	+8.7321	9.994	
25	48 Virginis	6	-62	-90	1 41.5	+ 9 2 50	-1.3204	.5357	-1.727	+8.7110	9.994	
25	δ Virginis tr.	4½	+44	-24	4 41.6	+11 57 29	+0.1823	.5351	-1.714	+8.9252	9.985	
25	ρ Virginis	5	-17	-90	15 43.8	- 1 20 30	-0.8821	.5333	-1.653	+8.9669	9.979	
25	σ Virginis	6	+82	+24	20 33.5	+ 3 20 21	+0.9920	.5327	-1.623	+9.1452	9.957	
26	94 Virginis	6	-9	-90	9 0.0	- 8 35 38	-0.7293	.5319	-1.533	+9.1571	9.955	
26	95 Virginis	6	+15	-53	9 13.0	- 8 23 5	-0.3032	.5319	-1.532	+9.1786	9.950	
26	96 Virginis	6½	+75	+1	10 21.1	- 7 16 59	+0.6418	.5319	-1.530	+9.2267	9.937	
26	π Virginis	4½	+49	-18	12 18.9	- 5 22 50	+0.2920	.5317	-1.499	+9.2245	9.938	
26	2 Libræ	6	+79	+32	17 36.7	- 0 14 33	+1.0912	.5317	-1.462	+9.2846	9.918	
27	ε¹ Libræ	6	-16	-90	9 13.7	- 9 5 58	-0.8082	.5326	-1.318	+9.2941	9.914	
27	α² Libræ	6	+76	+30	23 32.9	+ 4 47 14	+0.0512	.5341	-1.164	+9.4032	9.856	
28	γ Libræ	4½	+27	-34	5 47.9	+10 50 47	-0.0003	.5348	-1.093	+9.3940	9.862	
28	η Libræ	6	+61	-4	10 3.0	- 9 1 57	+0.5437	.5355	-1.043	+9.4198	9.844	

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Jan. 28	δ Libræ	4½	+74	+56	14 51.8	— 4 21 59	+1.2621	0.5364	—0.0884	—0.4491	9.1621
28	49 Libræ	5½	+74	+7	18 8.9	— 1 11 3	+0.7279	5372	—0.044	—0.4439	9.26
29	φ Ophiuchi	5	+4	—57	9 18.2	—10 29 54	—0.3511	5389	—0.745	—0.4486	9.821
29	24 Scorpil	5	+61	—2	14 23.0	— 5 34 36	+0.5774	5407	—0.671	—0.4776	9.795
29	B.A.C. 5695	6	—27	—90	21 27.5	+ 1 16 37	—0.8519	5427	—0.571	—0.4556	9.815
30	B.A.C. 5771	6½	+7	—49	3 22.8	+ 7 0 42	—0.2318	5439	—0.0485	—0.4764	9.796
30	B.A.C. 5839	6½	+4	—52	9 0.8	—11 31 56	—0.2805	5449	—0.403	—0.4808	9.791
31	VENUS		+51	—4	1 3.9	+ 4 0 26	+0.5310	5124	—0.125	—0.5071	9.763
31	B.A.C. 6060	6½	+51	—4	2 19.1	+ 5 13 9	+0.5349	5481	—0.140	—0.5076	9.763
31	B.A.C. 6267	6	—10	—67	17 38.0	— 3 57 30	—0.4827	5504	+0.104	—0.4871	9.785
31	B.A.C. 6257	6	+53	—3	18 40.6	— 2 56 56	+0.5559	5505	+0.120	—0.5084	9.762
31	B.A.C. 6292	6	+71	+10	19 13.0	— 2 25 31	+0.7622	5508	+0.127	—0.5124	9.757
31	B.A.C. 6293	6½	+20	—31	19 16.0	— 2 22 36	+0.0678	5508	+0.127	—0.4981	9.773
31	B.A.C. 6294	6	+29	—22	19 16.7	— 2 21 56	+0.2129	5508	+0.127	—0.5012	9.770
Feb. 1	ϵ^1 Sagittarii	4	+54	—4	19 7.0	— 3 18 1	+0.5326	5528	+0.0505	—0.4921	9.780
1	ϵ^2 Sagittarii	5½	+72	+39	19 10.8	— 3 14 21	+1.0373	5528	+0.0505	—0.5026	9.768
1	B.A.C. 6658	6	+72	+64	22 8.3	— 0 22 40	+1.2732	5530	+0.051	—0.5043	9.767
2	ϵ^1 Sagittarii	6	—11	—77	4 9.7	+ 5 27 1	—0.5891	5532	+0.640	—0.4557	9.815
2	ϵ^2 Sagittarii	5	—18	—90	5 1.0	+ 6 16 38	—0.7110	5532	+0.657	—0.4515	9.819
2	γ Sagittarii	5½	—24	—90	12 23.2	—10 38 26	—0.8323	5532	+0.766	—0.4361	9.832
5	ϵ Aquarii	5½	+3	—69	8 11.0	+ 7 0 39	—0.5168	5501	+0.1579	—0.1601	9.052
5	67 Aquarii	6	+57	—13	19 14.0	— 6 17 33	+0.3052	5495	+0.1663	—0.1247	9.8161
6	B.A.C. 8094	6	+1	—74	10 45.5	+ 8 44 2	—0.5848	5495	+0.1753	—0.8669	9.988
6	B.A.C. 8134	6½	+85	+36	13 31.4	+11 24 35	+1.1458	5498	+0.1766	—8.9736	9.981
6	11 Piscium	6½	—42	—90	18 24.2	— 7 49 57	—1.1965	5498	+0.1784	—8.6437	9.9996
7	B.A.C. 8311	6½	—25	—90	5 29.0	+ 2 51 20	—1.0058	5508	+0.1813	—8.0425	0.0000
7	B.A.C. 8365	6½	+61	—6	10 22.0	+ 7 34 55	+0.5220	5514	+0.1821	—8.3262	9.9999
7	B.A.C. 57	6½	—3	—84	16 23.4	—10 35 30	—0.6697	5523	+0.1825	+8.2186	9.999
7	44 Piscium	6	+19	—51	19 59.5	— 7 6 26	—0.2772	5528	+0.1824	+8.3217	9.999
8	73 Piscium	6½	—12	—85	14 26.3	+10 44 2	—0.8188	5569	+0.1789	+0.9351	9.984
8	77 Pisc. pr.	7	+36	—32	14 52.9	+11 9 45	+0.0303	5569	+0.1788	+8.2645	9.988
8	ϵ Piscium	5½	+5	—68	16 4.6	—11 40 58	—0.5293	5572	+0.1784	+8.9354	9.984
9	96 Piscium	6½	+3	—71	1 34.2	— 2 30 21	—0.5712	5600	+0.1742	+9.0609	9.971
9	μ Piscium	4½	+89	+6	2 4.6	— 2 0 59	+0.7057	5603	+0.1740	+9.9779	9.980
9	B.A.C. 481	6½	+13	—57	4 45.8	+ 0 34 49	—0.3856	5610	+0.1725	+9.0836	9.968
9	σ Piscium	4	—46	—82	8 59.5	+ 4 39 57	—1.2311	5625	+0.1699	+9.1690	9.952
9	64 Ceti	6½	+90	+54	20 41.5	— 8 2 8	+1.2644	5655	+0.1626	+9.1406	9.858
9	ζ^1 Ceti	4½	+90	+35	21 24.9	— 7 20 15	+1.0982	5673	+0.1605	+9.1553	9.955
10	B.A.C. 728	6½	+21	—45	1 56.1	— 2 58 27	—0.2452	5696	+0.1558	+9.2494	9.930
10	B.A.C. 741	6½	+90	+27	2 30.5	— 2 25 14	+0.9913	5691	+0.1559	+9.1995	9.945
10	ϵ Arietis	5½	+40	—26	2 38.2	— 2 17 49	+0.0935	5692	+0.1558	+9.2399	9.934
10	B.A.C. 755	6	+51	—16	3 29.7	— 1 28 7	+0.2708	5696	+0.1550	+9.2380	9.934
10	31 Arietis	5½	—27	—78	7 47.8	+ 2 40 56	—1.0231	5715	+0.1510	+9.3132	9.906
10	B.A.C. 830	6	+90	+37	10 24.3	+ 5 11 52	+1.1036	5727	+0.1480	+9.2469	9.931
10	38 Arietis	5	+7	—61	11 27.1	+ 6 12 28	—0.4928	5732	+0.1468	+9.3137	9.906
10	B.A.C. 987	6½	+63	—4	22 51.9	— 6 47 9	+0.4379	5782	+0.1333	+9.3367	9.895
10	Weis. III. 1085	8½	+90	+27	21 5.0	— 9 23 4	+0.8993	5882	+0.1010	+9.4032	9.856
11	Lal. 7671	8	—51	—73	22 50.0	— 7 40 7	—1.2325	5891	+0.0979	+9.4644	9.808
11	Lal. 7677	8	—50	—73	22 56.4	— 7 35 52	—1.2241	5892	+0.0978	+9.4644	9.808
11	Lal. 7702	9½	—32	—73	23 10.2	— 7 22 36	—1.0713	5892	+0.0976	+9.4611	9.811
11	Weis. IV. 24	9	+90	+30	23 45.2	— 6 48 55	+0.9311	5894	+0.0964	+9.4098	9.852
11	Lal. 7753	7½	+48	—12	23 50.0	— 6 44 19	+0.2195	5894	+0.0963	+9.4295	9.837
11	B.A.C. 1281	7	+7	—55	23 52.6	— 6 41 48	—0.4857	5894	+0.0962	+9.4451	9.822
11	Bunk. 1103	7	+73	+6	23 56.5	— 6 38 2	+0.5526	0.5895	+0.0961	+9.4207	9.9844

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of Conjunction.	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	I	p'	q'	Log sin D	Log cos D
Feb. 12	Rumk. 1110		-32	-73	h m	h m s	-1.0715	0.5898	+0.0951	+9.4642	9.9888
12	43 Tauri	6	+90	+31	1 50.2	-4 48 38	+0.9482	.5903	+0.0929	+9.4148	.9848
12	Rumk. 1136	6	+44	-15	2 15.3	-4 24 28	+0.1597	.5906	+0.0924	+9.4371	.9831
12	γ Tauri	4	+90	+25	3 29.0	-3 13 33	+0.8572	.5911	+0.0900	+9.4214	.9843
12	55 Tauri	7	+32	-26	3 30.9	-3 11 43	-0.0466	.5912	+0.0899	+9.4455	.9824
12	Rumk. 1161		-32	-73	4 7.7	-2 36 22	-1.0617	.5913	+0.0892	+9.4722	.9800
12	Rumk. 1163	8	+19	-40	4 10.9	-2 33 16	-0.2780	.5913	+0.0891	+9.4529	.9818
12	δ ¹ Tauri	4	-25	-73	4 43.9	-2 1 29	-0.9779	.5916	+0.0879	+9.4715	.9861
12	63 Tauri	6	+24	-34	4 56.8	-1 49 7	-0.1876	.5916	+0.0877	+9.4624	.9818
12	B.A.C. 1351	6½	+32	-25	4 58.2	-1 47 42	-0.0356	.5916	+0.0876	+9.4486	.9821
12	δ ² Tauri	6	-14	-73	5 13.0	-1 33 26	-0.8396	.5917	+0.0873	+9.4672	.9803
12	Lal. 8249	7½	+8	-52	5 19.5	-1 27 14	-0.4630	.5917	+0.0871	+9.4601	.9811
12	Lal. 8256	8	+19	-30	5 22.0	-1 24 49	-0.2628	.5918	+0.0865	+9.4552	.9816
12	δ ³ Tauri	5	-69	-73	5 46.2	-1 1 35	-1.2876	.5918	+0.0861	+9.4810	.9791
12	70 Tauri	7	+90	+18	5 52.0	-0 56 0	+0.7328	.5918	+0.0860	+9.4305	.9836
12	Lal. 8311	8	+90	+51	6 3.8	-0 44 36	+1.1676	.5920	+0.0857	+9.4191	.9845
12	Rumk. 1188	6½	+90	+51	6 4.0	-0 44 25	+1.1690	.5920	+0.0857	+9.4191	.9845
12	Rumk. 1189		+25	-33	6 9.9	-0 38 42	-0.1671	.5921	+0.0856	+9.4545	.9816
12	71 Tauri	6	+90	+43	6 10.1	-0 38 35	+1.0827	.5921	+0.0856	+9.4217	.9843
12	Rumk. 1192		+8	-52	6 12.8	-0 35 58	-0.4673	.5921	+0.0855	+9.4622	.9809
12	Rumk. 1198	6	+90	+39	6 28.5	-0 20 51	+1.0359	.5922	+0.0847	+9.4191	.9845
12	Rumk. 1200		+90	+49	6 40.7	-0 9 6	+1.1511	.5922	+0.0845	+9.4210	.9844
12	Rumk. 1203		+64	+2	6 58.4	+0 7 56	+0.4547	.5922	+0.0841	+9.4403	.9828
12	75 Tauri	6	+60	-1	7 0.9	+0 10 21	+0.3998	.5922	+0.0840	+9.4419	.9827
12	δ ⁴ Tauri	4½	+90	+29	7 4.3	+0 13 34	+0.8041	.5922	+0.0839	+9.4313	.9836
12	η ² Tauri	4½	+90	+29	7 6.6	+0 15 49	+0.8995	.5922	+0.0839	+9.4288	.9838
12	Rumk. 1210		+80	+11	7 14.2	+0 23 6	+0.6170	.5923	+0.0837	+9.4366	.9831
12	Rumk. 1212	6	-10	-73	7 21.1	+0 29 43	-0.7750	.5923	+0.0835	+9.4720	.9800
12	Rumk. 1214		-34	-73	7 24.6	+0 33 8	-1.0912	.5923	+0.0834	+9.4797	.9793
12	Rumk. 1215	7	-37	-73	7 25.1	+0 33 39	-1.1212	.5924	+0.0833	+9.4804	.9752
12	80 Tauri	6	+90	+53	7 43.2	+0 50 58	+1.1811	.5924	+0.0828	+9.4226	.9842
12	B.A.C. 1301	5	+82	+12	7 52.6	+1 0 4	+0.6308	.5925	+0.0826	+9.4377	.9831
12	81 Tauri	5½	+90	+48	7 55.5	+1 2 51	+1.1418	.5925	+0.0825	+9.4241	.9841
12	B.A.C. 1304	7	+89	+15	7 58.2	+1 5 25	+0.6786	.5925	+0.0824	+9.4366	.9831
12	Rumk. 1227	7	+90	+39	8 12.8	+1 19 30	+1.0382	.5926	+0.0820	+9.4276	.9839
12	85 Tauri	6	+90	+38	8 25.0	+1 31 11	+1.0172	.5928	+0.0815	+9.4286	.9838
12	Rumk. 1232		+51	-8	8 36.7	+1 42 28	+0.2762	.5930	+0.0811	+9.4484	.9821
12	Rumk. 1233		-26	-73	8 42.5	+1 48 4	-0.9922	.5931	+0.0809	+9.4799	.9793
12	Rumk. 1235		+90	+28	8 48.4	+1 53 42	+0.8898	.5932	+0.0808	+9.4328	.9835
12	B.A.C. 1406	7	+77	+10	9 8.1	+2 12 39	+0.5928	.5932	+0.0802	+9.4414	.9828
12	Rumk. 1238	10	+62	+1	9 28.0	+2 31 52	+0.4235	.5935	+0.0798	+9.4463	.9823
12	Lal. 8599	9	-14	-73	9 32.0	+2 35 38	-0.8207	.5935	+0.0795	+9.4774	.9795
12	Lal. 8610	8	+31	-26	9 39.9	+2 43 16	-0.0522	.5936	+0.0793	+9.4589	.9812
12	Lal. 8613	8	+20	-38	9 41.2	+2 44 28	-0.2549	.5936	+0.0793	+9.4640	.9808
12	α Tauri	1	+65	+3	10 3.5	+3 5 55	+0.4654	.5936	+0.0785	+9.4466	.9823
12	89 Tauri	7	+90	+38	10 58.7	+3 50 1	+1.0167	.5940	+0.0780	+9.4340	.9833
12	α ¹ Tauri	5½	+90	+70	11 23.4	+4 22 50	+1.2803	.5944	+0.0762	+9.4278	.9838
12	α ² Tauri	5½	+90	+51	11 26.0	+4 25 21	+1.1655	.5944	+0.0761	+9.4310	.9836
12	Rumk. 1241		+75	+9	11 40.5	+4 39 17	+0.5713	.5942	+0.0756	+9.4470	.9823
12	Rumk. 1243	8	+77	+11	11 53.1	+4 51 21	+0.5931	.5943	+0.0752	+9.4469	.9823
12	Rumk. 1246	7	+18	-39	12 19.6	+5 16 51	-0.9834	.5943	+0.0746	+9.4606	.9802
12	Rumk. 1247		+62	+1	12 19.9	+5 17 10	+0.4293	.5943	+0.0746	+9.4519	.9818
12	Rumk. 1254		+66	+4	12 35.4	+5 32 3	+0.4714	.5947	+0.0738	+9.4513	.9819
12	Rumk. 1255		+90	+55	12 36.6	+5 33 10	+1.1907	.5947	+0.0738	+9.4326	.9835
12	Lal. 8852	9½	+26	-30	12 54.5	+5 50 22	-0.1446	.5947	+0.0734	+9.4673	.9805

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

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			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Feb. 12	Rumk. 1263	9½	+90	+52	13 31.5	+ 6 26 0	+1.1612	0.5950	+0.0720	+9.4352	9.9833
12	Rumk. 1276	9½	-51	-72	14 33.7	+ 7 25 49	-1.2246	.5952	+0.0701	+9.4956	.9776
12	Rumk. 1283	7	+90	+17	15 13.7	+ 8 4 16	+0.6844	.5953	+0.0692	+9.4507	.9820
12	Rumk. 1294	7	+90	+53	16 5.8	+ 8 54 21	+1.1679	.5959	+0.0675	+9.4397	.9829
12	Rumk. 1299	7½	+17	-39	16 29.5	+ 9 17 14	-0.3021	.5959	+0.0665	+9.4771	.9795
12	Rumk. 1390	6	+20	-36	16 31.8	+ 9 19 25	-0.2464	.5961	+0.0664	+9.4759	.9797
12	B.A.C. 1526	6	+58	-1	18 44.0	+11 26 30	+0.3668	.5968	+0.0623	+9.4645	.9808
13	m Tauri	5½	-21	-72	22 43.2	- 8 43 36	-0.9326	.5980	+0.0547	+9.5006	.9770
13	111 Tauri	6	+80	+15	5 33.3	- 2 9 27	+0.6111	.5999	+0.0411	+9.4722	.9800
13	115 Tauri	5½	+38	-15	6 39.0	- 1 6 19	+0.6636	.6003	+0.0389	+9.4863	.9786
13	117 Tauri	6	+90	+26	7 0.5	- 0 45 38	+0.8013	.6005	+0.0384	+9.4690	.9803
13	119 Tauri	5½	+5	-51	8 38.7	+ 0 48 45	-0.5136	.6008	+0.0349	+9.5012	.9770
13	B.A.C. 1728	6	+90	+44	8 41.4	+ 0 51 21	+1.0344	.6008	+0.0348	+9.4648	.9807
13	120 Tauri	6	+9	-46	9 10.2	+ 1 18 59	-0.4453	.6009	+0.0341	+9.5001	.9771
13	122 Tauri	6	+90	+49	10 36.4	+ 2 41 52	+1.0965	.6012	+0.0309	+9.4648	.9807
13	130 Tauri	6	+77	+9	14 42.7	+ 6 38 29	+0.4821	.6020	+0.0226	+9.4823	.9790
14	B.A.C. 1930	6½	+78	+17	20 51.5	-11 27 15	+0.5950	.6031	+0.0099	+9.4820	.9790
14	71 Orionis	5½	-21	-71	1 31.9	- 6 57 53	-0.9224	.6034	.0000	+9.5169	.9751
14	26 Geminor.	5½	+59	+4	12 26.6	+ 3 30 55	+0.3863	.6038	-0.0228	+9.4846	.9788
15	1 Geminor.	3½	+90	+29	2 36.1	+ 6 52 58	+0.8594	.6027	-0.0517	+9.4603	.9811
15	B.A.C. 2432	6½	-27	-72	4 33.0	- 5 0 44	+1.0005	.6026	-0.0566	+9.5020	.9769
15	63 Geminor.	5½	+90	+54	8 47.5	- 0 56 7	+1.1727	.6020	-0.0639	+9.4432	.9826
15	f Geminor.	6	-16	-72	11 5.8	+ 1 16 47	-0.8531	.6016	-0.0682	+9.4893	.9783
15	1 Cancri	6	+65	+2	18 9.8	+ 8 4 16	+0.4578	.5999	-0.0797	+9.4440	.9826
15	3 Cancri	6	-47	-73	19 39.8	+ 9 30 46	-1.2028	.5987	-0.0845	+9.4821	.9790
15	5 Cancri	6	+13	-46	19 58.1	+ 9 48 20	-0.3731	.5986	-0.0850	+9.4614	.9810
15	B.A.C. 2731	6½	-61	-73	23 23.8	-10 53 51	-1.2723	.5975	-0.0914	+9.4757	.9797
16	29 Cancri	6	+90	+18	7 1.4	+ 3 33 47	+0.7637	.5948	-0.1043	+9.4028	.9856
17	ε Leonis	6	+50	-15	9 28.9	- 2 5 30	+0.2627	.5832	-0.1428	+9.3137	.9906
17	o Leonis	3½	+90	+38	13 26.5	+ 1 43 26	+1.1018	.5810	-0.1474	+9.2603	.9927
17	18 Leonis	6	-42	-78	15 39.4	+ 3 51 34	-1.1847	.5801	-0.1499	+9.3325	.9897
17	B.A.C. 3345	6	-16	-78	16 10.0	+ 4 21 1	-0.8768	.5801	-0.1503	+9.3193	.9904
17	B.A.C. 3395	6	+90	+33	20 2.3	+ 8 5 1	+1.0588	.5780	-0.1544	+9.2202	.9939
18	A Leonis	5	-13	-80	1 1.4	-11 6 31	-0.8310	.5756	-0.1592	+9.2665	.9925
18	B.A.C. 3538	6½	-12	-81	7 20.3	- 5 0 57	-0.8179	.5724	-0.1645	+9.2234	.9938
18	44 Leonis	6	-15	-81	8 40.5	- 3 43 36	-0.8620	.5715	-0.1657	+9.2156	.9941
18	B.A.C. 3562	6½	-16	-81	8 49.7	- 3 34 43	-0.8762	.5714	-0.1658	+9.2151	.9941
18	48 Leonis	6	+52	-16	12 57.0	+ 0 23 58	+0.2895	.5695	-0.1688	+9.1233	.9961
18	37 Sextantis	6	+35	-32	18 0.9	+ 5 17 25	+0.0060	.5670	-0.1720	+9.0902	.9967
19	c Leonis	5	-16	-83	0 39.5	+11 42 26	-0.8843	.5636	-0.1755	+9.0741	.9969
19	τ Leonis	5	+48	-21	13 10.6	- 0 11 37	+0.2249	.5582	-0.1799	+8.7961	.9902
19	89 Leonis	6	+5	-69	16 10.9	+ 2 42 44	-0.5357	.5571	-0.1805	+8.8208	.9990
19	β Virginis	3½	+3	-73	23 46.6	+10 3 26	-0.5749	.5536	-0.1815	+8.6415	.9996
20	B.A.C. 4043	6	+34	-34	3 46.9	-10 4 5	-0.0037	.5522	-0.1816	+8.3449	.9999
20	13 Virginis	6½	+17	-53	13 7.3	- 1 1 47	-0.3158	.5489	-0.1809	-7.9418	0.0000
20	η Virginis	3½	+4	-71	13 43.1	- 0 27 6	-0.5504	.5487	-0.1808	+8.0882	0.0000
21	38 Virginis	6	+14	-57	5 48.2	- 8 52 37	-0.3663	.5439	-0.1764	-8.6037	9.9995
21	k Virginis	6	-1	-80	8 56.4	- 5 50 19	-0.6396	.5431	-0.1752	-8.7322	.9994
21	46 Virginis	6½	-41	-90	9 24.1	- 5 23 34	-1.1893	.5430	-0.1749	-8.6655	.9995
21	48 Virginis	6	-38	-90	10 0.9	- 4 49 48	-1.1588	.5426	-0.1743	-8.7112	.9994
21	δ Virginis tr.	4½	+54	-16	13 57.5	- 0 58 44	+0.3346	.5421	-0.1729	-8.9253	.9985
21	66 Virginis	6	-54	-90	21 6.9	+ 5 57 21	-1.2791	.5415	-0.1694	-8.8916	.9987
22	ρ Virginis	5	-7	-90	0 46.4	+ 9 30 2	-0.7142	.5400	-0.1668	-8.9670	.9979
22	σ Virginis	6	+82	+37	5 30.4	- 9 54 49	+1.1479	.5394	-0.1638	-9.1453	.9957
22	94 Virginis	6	+1	-72	17 42.7	+ 1 54 54	-0.5551	0.5380	-0.1547	-9.1571	9.9955

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
					h m s	h m s						
Feb. 22	95 Virginis	6	+24	-42	17 55.4	+ 2 7 13	-0.1322	0.5380	-0.1546	-9.1786	9.9950	
22	96 Virginis	6½	+31	+11	19 2.3	+ 3 12 4	+0.8059	.5379	-0.1537	-9.2268	.9937	
22	α Virginis	4½	+60	- 9	20 57.9	+ 5 4 5	+0.4589	.5377	-0.1521	-9.2245	.9938	
23	2 Libræ	6	+79	+50	2 10.2	+10 6 46	+1.2543	.5374	-0.1477	-9.2847	.9918	
23	γ Libræ	6	- 6	-80	17 32.3	+ 1 0 27	-0.6301	.5369	-0.1327	-9.2042	.9914	
24	α Libræ	6	+76	+47	7 40.6	- 9 17 21	+1.2165	.5374	-0.1173	-9.4032	.9856	
24	γ Libræ	4½	+37	-25	13 51.7	- 2 17 44	+0.1698	.5378	-0.1101	-9.3040	.9862	
24	η Libræ	6	+75	+ 6	18 4.4	+ 0 47 8	+0.7101	.5381	-0.1050	-9.4199	.9844	
25	49 Libræ	5½	+74	+18	2 6.5	+ 8 34 18	+0.8913	.5389	-0.0950	-9.4439	.9826	
25	φ Ophiuchi	5	+12	-46	17 11.4	- 0 48 58	-0.1901	.5406	-0.0749	-9.4426	.9821	
25	24 Scorpii	5	+72	+ 8	22 15.4	+ 4 5 34	+0.7332	.5411	-0.0679	-9.4776	.9795	
26	B.A.C. 5695	6	-18	-90	5 19.4	+10 56 13	-0.6968	.5421	-0.0579	-9.4556	.9815	
26	B.A.C. 5771	6½	+16	-39	11 14.7	- 7 19 39	-0.0817	.5429	-0.0493	-9.4764	.9796	
26	B.A.C. 5839	6½	+12	-42	16 53.2	- 1 51 54	-0.1341	.5436	-0.0408	-9.4808	.9791	
27	B.A.C. 6060	6½	+64	+ 4	10 14.5	- 0 3 42	+0.6679	.5460	-0.0146	-9.5076	.9763	
27	6 Sagittarii	6	-57	-90	12 55.0	- 6 28 18	-1.1633	.5464	-0.0104	-9.4695	.9802	
28	B.A.C. 6267	6	- 4	-58	1 37.7	+ 5 49 59	-0.3622	.5478	+0.0005	-9.4871	.9785	
28	B.A.C. 6257	6	+65	+ 5	2 40.6	+ 6 50 53	+0.6751	.5479	+0.0111	-9.5084	.9762	
28	B.A.C. 6212	6	+71	+18	3 13.3	+ 7 22 28	+0.8808	.5479	+0.0117	-9.5124	.9757	
28	B.A.C. 6213	6½	+27	-24	3 16.3	+ 7 25 24	+0.1766	.5479	+0.0118	-9.4981	.9773	
28	B.A.C. 6214	6	+36	-15	3 17.0	+ 7 26 5	+0.3317	.5479	+0.0118	-9.5012	.9770	
Mar. 1	α Sagittarii	4	+63	+ 2	3 14.7	+ 6 37 25	+0.6228	.5503	+0.0492	-9.4121	.9780	
1	β Sagittarii	5½	+72	+39	3 18.5	+ 6 41 5	+1.1332	.5503	+0.0493	-9.5626	.9768	
1	γ Sagittarii	6	- 6	-63	12 19.7	- 8 35 12	-0.5012	.5509	+0.630	-9.4557	.9815	
1	δ Sagittarii	5	-13	-81	13 11.2	- 7 45 23	-0.6240	.5509	+0.644	-9.4515	.9819	
1	η Sagittarii	5½	-19	-90	20 31.9	- 0 39 2	-0.7525	.5513	+0.0756	-9.4361	.9832	
2	B.A.C. 6992	6½	- 6	-72	7 22.3	+ 9 50 17	-0.5415	.5519	+0.0913	-9.4126	.9845	
2	γ Capricor.	3	- 5	-71	7 28.9	+ 9 56 42	-0.5351	.5520	+0.0915	-9.4185	.9845	
2	B.A.C. 7063	6	+36	-23	11 45.8	+ 9 53 46	+0.1946	.5520	+0.0974	-9.4268	.9839	
2	γ Capricor.	6	+70	+ 3	15 13.3	- 6 34 0	+0.6545	.5521	+0.1020	-9.4207	.9837	
2	γ Capricor.	5	+61	- 3	16 8.4	- 5 40 41	+0.5474	.5521	+0.1033	-9.4246	.9841	
3	8 Aquarii	6	+ 7	-58	1 58.0	+ 3 49 44	-0.3738	.5525	+0.1164	-9.3702	.9677	
3	9 Aquarii	6	+39	-22	2 32.1	+ 4 22 45	+0.2118	.5526	+0.1172	-9.3851	.9668	
3	18 Aquarii	6	+77	+19	13 23.2	- 9 2 28	+0.9185	.5527	+0.1367	-9.3665	.9879	
4	2 Capricor.	5½	+78	+11	0 5.2	+ 1 13 49	+0.7960	.5531	+0.1424	-9.3171	.9904	
7	44 Piscium	6	+17	-54	2 45.8	+ 1 27 31	-0.3227	.5601	+0.1841	+8.3216	.9909	
7	73 Piscium	6½	-15	-85	20 48.0	- 5 6 44	-0.8714	.5640	+0.1867	+8.9351	.9984	
7	77 Pisc. pr.	7	+33	-35	21 14.1	- 4 41 36	-0.0303	.5642	+0.1866	+8.8645	.9988	
7	ε Piscium	5½	+ 2	-73	22 21.2	- 3 33 53	-0.5855	.5645	+0.1801	+8.9354	.9984	
8	96 Piscium	6½	- 1	-77	7 41.8	+ 5 24 39	-0.6323	.5671	+0.1759	+9.0608	.9971	
8	μ Piscium	4½	+80	+ 2	8 11.5	+ 5 53 22	+0.6336	.5673	+0.1757	+8.9779	.9980	
8	B.A.C. 481	6½	+10	-61	10 49.4	+ 8 25 51	-0.4498	.5679	+0.1741	+9.0835	.9968	
8	o Piscium	4	-55	-82	14 58.2	-11 34 1	-1.2903	.5692	+0.1715	+9.1690	.9952	
9	64 Ceti	6½	+90	+43	2 27.4	- 0 28 53	+1.1830	.5728	+0.1624	+9.1406	.9958	
9	γ Ceti	4½	+90	+29	3 10.0	+ 0 12 17	+1.0177	.5732	+0.1620	+9.1552	.9955	
9	B.A.C. 723	6½	+17	-50	7 36.9	+ 4 29 44	-0.3185	.5748	+0.1577	+9.2494	.9930	
9	B.A.C. 741	6½	+90	+21	8 10.7	+ 5 2 22	+0.9105	.5748	+0.1573	+9.1985	.9945	
9	ε Arietis	5½	+35	-30	8 18.3	+ 5 9 42	+0.1979	.5748	+0.1572	+9.2399	.9934	
9	B.A.C. 755	6	+46	-20	9 9.1	+ 5 58 38	+0.1940	.5748	+0.1563	+9.2380	.9934	
9	31 Arietis	5½	-33	-78	13 23.4	+10 3 55	-1.0940	.5766	+0.1517	+9.3131	.9906	
9	B.A.C. 830	6	+90	+31	15 57.8	-11 27 14	+1.0214	.5774	+0.1491	+9.2469	.9931	
9	38 Arietis	5	+ 3	-67	16 59.8	-10 27 29	-0.5675	.5778	+0.1479	+9.3137	.9906	
10	B.A.C. 987	6½	+57	- 9	4 17.4	+ 0 25 41	+0.3585	.5816	+0.1342	+9.3367	.9895	
11	Wei III. 1085	8½	+90	+22	2 24.7	- 2 16 6	+0.8211	.5888	+0.1008	+9.4032	.9856	
11	Lal. 7702	9½	-40	-73	4 29.9	- 0 15 35	-1.1503	0.5892	+0.0973	+9.4611	.9981	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Mar. 11	Weis. IV. 24	9	+90	+24	5 4.9	+ 0 18 8	+0.8537	0.5894	+0.0966	+9.4097	9.9852
11	Lal. 7753	7½	+43	-17	5 9.7	+ 0 22 45	+0.1415	.5894	+0.0965	+9.4295	.9837
11	B.A.C. 1281	7	+ 2	-61	5 12.3	+ 0 25 15	-0.5645	.5894	+0.0964	+9.4481	.9822
11	Rumk. 1103	7	+66	+ 2	5 16.3	+ 0 29 3	+0.4747	.5894	+0.0964	+9.4207	.9844
11	Rumk. 1108	9	+90	+56	5 42.6	+ 0 54 27	+1.2153	.5897	+0.0954	+9.4011	.9858
11	Rumk. 1110		-40	-73	5 47.5	+ 0 59 6	-1.1505	.5897	+0.0953	+9.4642	.9808
11	43 Tauri	6	+90	+26	7 10.1	+ 2 18 36	+0.8714	.5901	+0.0931	+9.4148	.9848
11	Rumk. 1136	6	+39	-19	7 35.3	+ 2 42 50	+0.0820	.5902	+0.0921	+9.4371	.9831
11	γ Tauri	4	+90	+20	8 49.2	+ 3 53 57	+0.7809	.5905	+0.0901	+9.4214	.9843
11	55 Tauri	7	+27	-31	8 51.1	+ 3 55 48	-0.1244	.5906	+0.0901	+9.4455	.9824
11	Rumk. 1161		-39	-73	9 28.0	+ 4 31 18	-1.1410	.5906	+0.0888	+9.4722	.9800
11	Rumk. 1163	8	+14	-45	9 31.2	+ 4 34 22	-0.3561	.5907	+0.0888	+9.4529	.9818
11	δ^1 Tauri	4	-31	-73	10 4.3	+ 5 6 15	-1.0571	.5907	+0.0881	+9.4715	.9801
11	63 Tauri	6	+19	-39	10 17.2	+ 5 18 40	-0.2655	.5907	+0.0878	+9.4524	.9918
11	B.A.C. 1351	6½	+28	-30	10 18.7	+ 5 20 6	-0.1133	.5907	+0.0877	+9.4485	.9821
11	δ^2 Tauri	6	-20	-73	10 33.1	+ 5 33 55	-0.9192	.5909	+0.0870	+9.4691	.9803
11	Lal. 8249	7½	+ 4	-58	10 40.0	+ 5 40 39	-0.5411	.5909	+0.0868	+9.4601	.9811
11	Lal. 8256	8	+15	-44	10 42.6	+ 5 43 5	-0.3407	.5909	+0.0868	+9.4552	.9816
11	70 Tauri	7	+85	+13	11 12.6	+ 6 12 0	+0.6566	.5909	+0.0861	+9.4305	.9836
11	Lal. 8311	8	+90	+44	11 24.5	+ 6 23 26	+1.0924	.5911	+0.0854	+9.4191	.9845
11	Rumk. 1188	6½	+90	+44	11 24.7	+ 6 23 36	+1.0937	.5911	+0.0854	+9.4191	.9845
11	Rumk. 1189		+20	-33	11 30.7	+ 6 29 22	-0.2448	.5911	+0.0853	+9.4545	.9816
11	71 Tauri	6	+90	+36	11 30.8	+ 6 29 28	+1.0074	.5911	+0.0853	+9.4217	.9843
11	Rumk. 1192		+ 3	-68	11 33.5	+ 6 32 6	-0.5455	.5912	+0.0852	+9.4621	.9809
11	Rumk. 1198	6	+90	+47	11 49.3	+ 6 47 18	+1.1295	.5912	+0.0849	+9.4191	.9845
11	Rumk. 1200		+90	+42	12 1.5	+ 6 59 4	+1.0760	.5912	+0.0846	+9.4210	.9844
11	Rumk. 1203		+58	- 2	12 19.4	+ 7 16 12	+0.3784	.5912	+0.0842	+9.4403	.9828
11	75 Tauri	6	+55	- 5	12 21.8	+ 7 18 35	+0.3233	.5912	+0.0842	+9.4419	.9827
11	δ^1 Tauri	4½	+90	+18	12 25.2	+ 7 21 50	+0.7284	.5913	+0.0837	+9.4313	.9836
11	δ^2 Tauri	4½	+90	+24	12 27.6	+ 7 24 6	+0.8243	.5913	+0.0836	+9.4288	.9838
11	Rumk. 1210		+72	+ 7	12 35.2	+ 7 31 26	+0.5414	.5914	+0.0834	+9.4366	.9831
11	Rumk. 1210	6	-16	-73	12 42.1	+ 7 38 4	-0.8539	.5914	+0.0833	+9.4720	.9800
11	Rumk. 1214		-43	-73	12 45.6	+ 7 41 29	-1.1706	.5914	+0.0832	+9.4737	.9793
11	Rumk. 1215	7	-47	-73	12 46.2	+ 7 42 1	-1.2009	.5914	+0.0832	+9.4804	.9792
11	80 Tauri <i>pr.</i>	6	+90	+45	13 4.3	+ 7 59 26	+1.1069	.5915	+0.0828	+9.4226	.9842
11	B.A.C. 1391	5	+73	+ 8	13 13.8	+ 8 8 36	+0.5553	.5915	+0.0826	+9.4377	.9831
11	81 Tauri	5½	+90	+41	13 16.7	+ 8 11 26	+1.0676	.5915	+0.0825	+9.4241	.9841
11	B.A.C. 1394	7	+78	+10	13 19.4	+ 8 13 56	+0.6030	.5916	+0.0824	+9.4366	.9831
11	Rumk. 1227	7	+90	+34	13 34.1	+ 8 28 6	+0.9640	.5917	+0.0817	+9.4276	.9839
11	85 Tauri	6	+90	+32	13 46.3	+ 8 39 50	+0.9428	.5917	+0.0814	+9.4286	.9838
11	Rumk. 1232		+46	-13	13 58.1	+ 8 51 12	+0.2000	.5917	+0.0811	+9.4484	.9821
11	Rumk. 1233		-33	-73	14 3.9	+ 8 56 49	-1.0715	.5917	+0.0810	+9.4798	.9793
11	Rumk. 1235		+90	+23	14 9.8	+ 9 2 30	+0.8149	.5918	+0.0807	+9.4328	.9835
11	B.A.C. 1406	7	+70	+ 6	14 29.6	+ 9 21 31	+0.5175	.5919	+0.0800	+9.4413	.9828
11	Rumk. 1238	10	+57	- 3	14 49.5	+ 9 40 42	+0.3528	.5919	+0.0795	+9.4463	.9823
11	Lal. 8599	9	-19	-73	14 53.6	+ 9 43 38	-0.8999	.5920	+0.0795	+9.4774	.9795
11	Lal. 8610	8	+27	-30	15 1.6	+ 9 52 19	-0.1291	.5920	+0.0793	+9.4589	.9812
11	Lal. 8613	8	+15	-42	15 2.9	+ 9 53 32	-0.3324	.5920	+0.0792	+9.4640	.9808
11	α Tauri	1	+59	- 1	15 25.3	+10 15 6	+0.3900	.5922	+0.0783	+9.4466	.9823
11	89 Tauri	7	+90	+32	16 20.8	+11 8 32	+0.9430	.5924	+0.0770	+9.4340	.9833
11	α^1 Tauri	5½	+90	+57	16 45.7	+11 32 29	+1.2075	.5925	+0.0760	+9.4278	.9838
11	α^2 Tauri	5½	+90	+44	16 46.4	+11 33 0	+1.0924	.5925	+0.0759	+9.4310	.9836
11	Rumk. 1241		+63	+ 5	17 2.9	+11 49 2	+0.4967	.5926	+0.0756	+9.4470	.9823
11	Rumk. 1243	8	+70	+ 6	17 15.6	+11 58 47	+0.5184	.5926	+0.0753	+9.4469	.9823
11	Rumk. 1246	7	+14	-44	17 42.3	+11 33 7	-0.3606	.5926	+0.0743	+9.4696	9.9802

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
					^h ^m	^h ^m ^s					
Mar. 11	Rumk. 1247		+57	-3	17 42.6	-11 32 48	+0.3545	0.5926	+0.0742	+9.4519	9.9848
11	Rumk. 1254		+60	0	17 58.2	-11 17 50	+0.3965	.5927	+0.0739	+9.4513	.9819
11	Rumk. 1255		+90	+47	17 59.3	-11 16 43	+1.1181	.5927	+0.0738	+9.4326	.9835
11	Lal. 8352	9½	+22	-35	18 17.4	-10 59 21	-0.2214	.5928	+0.0734	+9.4673	.9805
11	Rumk. 1263	9½	+90	+44	18 54.6	-10 23 30	+1.0892	.5929	+0.0721	+9.4352	.9833
11	Rumk. 1268	8½	+90	+65	19 29.7	-9 49 49	+1.2563	.5932	+0.0709	+9.4319	.9835
11	Rumk. 1283	7	+79	+12	20 37.6	-8 44 28	+0.6112	.5933	+0.0688	+9.4506	.9820
11	Rumk. 1294		+90	+46	21 30.1	-7 53 57	+1.0967	.5935	+0.0672	+9.4397	.9829
11	Rumk. 1299	7½	+13	-44	21 54.1	-7 30 55	-0.3786	.5936	+0.0666	+9.4771	.9795
11	Rumk. 1300		+16	-41	21 56.4	-7 28 43	-0.3229	.5936	+0.0665	+9.4759	.9797
12	B.A.C. 1526	6	+52	-5	0 9.7	-5 20 26	+0.2934	.5940	+0.0625	+9.4645	.9808
12	m Tauri	5½	-28	-72	4 11.3	-1 28 6	-1.0113	.5948	+0.0548	+9.5006	.9770
12	111 Tauri	6	+72	+11	11 6.5	+5 11 7	+0.5415	.5957	+0.0414	+9.4722	.9800
12	113 Tauri	6	+90	+68	11 48.9	+5 51 58	+1.2575	.5959	+0.0401	+9.4553	.9815
12	115 Tauri	5½	+34	-19	12 13.1	+6 15 11	-0.0083	.5959	+0.0392	+9.4863	.9786
12	117 Tauri	6	+90	+22	12 34.9	+6 36 12	+0.7340	.5959	+0.0382	+9.4690	.9803
12	119 Tauri	5½	+1	-58	14 14.6	+8 12 0	-0.5888	.5961	+0.0352	+9.5013	.9770
12	B.A.C. 1728	6½	+90	+39	14 17.3	+8 14 40	+0.9721	.5961	+0.0352	+9.4647	.9807
12	120 Tauri	6	+5	-52	14 46.5	+8 42 42	-0.5199	.5962	+0.0339	+9.5001	.9771
12	122 Tauri	6	+90	+44	16 14.1	+10 6 54	+1.0330	.5962	+0.0313	+9.4648	.9807
12	130 Tauri	6	+62	+4	20 24.4	-9 52 26	+0.4162	.5966	+0.0225	+9.4623	.9790
13	B.A.C. 1930	6½	+72	+13	2 30.9	-3 51 24	+0.5329	.5968	+0.0101	+9.4819	.9790
13	71 Orionis	5½	-27	-71	7 26.0	+0 43 37	-0.9061	.5968	+0.0003	+9.5169	.9751
13	23 Geminor.	6½	+90	+70	16 1.9	+8 59 40	+1.2601	.5962	-0.0187	+9.4634	.9808
13	26 Geminor.	5½	+55	+1	18 35.3	+11 27 8	+0.3293	.5962	-0.0220	+9.4846	.9788
14	1 Geminor.	3½	+90	+26	9 6.5	+1 24 58	+0.8141	.5940	-0.0502	+9.4603	.9811
14	B.A.C. 2432	6½	-33	-72	11 6.5	+3 20 23	-1.0659	.5935	-0.0541	+9.5020	.9769
14	68 Geminor.	5½	+90	+50	15 28.1	+7 32 1	+1.1342	.5927	-0.626	+9.4432	.9826
14	f Geminor.	6	-20	-72	17 50.3	+9 48 48	-0.9137	.5920	-0.0668	+9.4893	.9783
15	1 Cancri	6	+61	0	1 6.3	-7 11 38	+0.4156	.5902	-0.0798	+9.4440	.9826
15	3 Cancri	6	-59	-73	2 38.8	-5 42 35	-1.2644	.5897	-0.0827	+9.4821	.9790
15	5 Cancri	6	+10	-49	2 57.6	-5 24 29	-0.4243	.5897	-0.0831	+9.4614	.9810
15	29 Cancri	6	+90	+16	14 20.1	+5 32 32	+0.7327	.5859	-0.1020	+9.4028	.9856
16	ε Leonis	6	+49	-16	17 31.3	+7 44 38	+0.2389	.5753	-0.1404	+9.3137	.9906
16	o Leonis	3½	+90	+36	21 34.8	+11 39 33	+1.0897	.5735	-0.1449	+9.2603	.9827
16	18 Leonis	6	-46	-78	23 51.0	-10 9 1	-1.2212	.5728	-0.1474	+9.3325	.9897
17	B.A.C. 3345	6	-18	-78	0 22.3	-9 38 51	-0.9097	.5725	-0.1481	+9.3193	.9904
17	B.A.C. 3398	6	+90	+32	4 20.2	-5 49 16	+1.0495	.5711	-0.1519	+9.2202	.9939
17	A Leonis	5	-15	-80	9 26.0	-0 54 4	-0.8584	.5690	-0.1570	+9.2665	.9925
17	B.A.C. 3538	6½	-14	-81	15 52.9	+5 19 30	-0.8414	.5665	-0.1624	+9.2234	.9938
17	44 Leonis	6	-16	-81	17 14.7	+6 38 29	-0.8851	.5658	-0.1634	+9.2156	.9941
17	B.A.C. 3562	6½	-17	-81	17 24.1	+6 47 33	-0.8995	.5656	-0.1637	+9.2151	.9941
17	48 Leonis	6	+51	-17	21 36.1	+10 50 58	+0.2793	.5642	-0.1667	+9.1233	.9961
18	37 Sextantis	6	+34	-33	2 45.4	-8 10 10	-0.0042	.5622	-0.1701	+9.0902	.9967
18	c Leonis	5	-17	-83	9 30.3	-1 38 49	-0.8983	.5598	-0.1738	+9.0741	.9969
18	τ Leonis	5	+47	-21	22 1.0	+10 26 40	+0.2245	.5557	-0.1787	+8.7960	.9992
19	89 Leonis	6	+5	-70	1 13.1	-10 27 10	-0.5391	.5548	-0.1794	+8.8907	.9990
19	β Virginis	3½	+3	-73	8 52.6	-3 2 38	-0.5753	.5525	-0.1808	+8.6415	.9996
19	B.A.C. 4043	6½	+34	-34	12 54.4	+0 51 19	0.0000	.5514	-0.1810	+8.3448	.9999
19	13 Virginis	6	+17	-53	22 17.1	+9 56 2	-0.3098	.5492	-0.1807	-7.9466	0.0000
19	γ Virginis	3½	+4	-71	22 53.1	+10 30 49	-0.5451	.5490	-0.1806	+7.0848	0.0000
20	38 Virginis	6	+14	-56	14 58.3	+2 5 25	-0.3544	.5458	-0.1769	-8.6939	9.9995
20	κ Virginis	6	-1	-79	18 6.1	+5 7 14	-0.6282	.5453	-0.1756	-8.7323	.9994
20	46 Virginis	6½	-40	-90	18 33.6	+5 33 54	-1.1779	.5451	-0.1754	-8.6656	.9995
20	48 Virginis	6	-37	-90	20 10.1	+7 7 22	-1.1468	0.5448	-0.1748	-8.7113	9.9994

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			North- ern.	South- ern.		H	I	p'	q'	Log sin D	Log cos D
Mar. 20	♈ Virginis tr.	4½	+55	-15	23 6.0	+ 9 57 45	+0.3476	0.5445	-.1735	-8.9251	9.9985
21	♈ Virginis	6	-51	-90	6 13.3	- 7 8 20	-1.2621	.5435	-.1609	-8.8917	.9987
21	♈ Virginis	5	- 6	-88	9 51.5	- 3 36 59	-0.6992	.5433	-.1677	-8.9871	.9979
21	♈ Virginis	6	+82	+38	14 33.5	+ 0 56 10	+1.1614	.5426	-.1646	-9.1453	.9957
22	♈ Virginis	6	+ 2	-70	2 39.7	-11 20 13	-0.5375	.5418	-.1558	-9.1572	.9955
22	♈ Virginis	6	+26	-41	2 52.3	-11 8 1	-0.1156	.5418	-.1557	-9.1787	.9950
22	♈ Virginis	6½	+81	+12	3 58.6	-10 3 46	+0.8205	.5416	-.1547	-9.2263	.9937
22	♈ Virginis	4½	-61	- 8	5 53.1	- 8 12 52	+0.4743	.5416	-.1532	-9.2246	.9938
22	♈ Libræ	6	+79	+53	11 2.3	- 3 13 15	+1.2677	.5414	-.1487	-9.2847	.9918
23	♈ Libræ	6	- 5	-78	2 14.8	+11 30 50	-0.6116	.5413	-.1339	-9.2942	.9914
23	♈ Libræ	6	-64	-90	3 25.4	-11 20 45	-1.2045	.5411	-.1325	-9.2756	.9921
23	♈ Libræ	6	+76	+49	16 14.2	+ 1 4 4	+1.2289	.5415	-.1184	-9.4032	.9856
23	♈ Libræ	4½	+37	-24	22 21.5	+ 6 50 56	+0.1847	.5417	-.1111	-9.3940	.9862
24	♈ Libræ	6	+75	+ 7	2 31.8	+11 2 23	+0.7234	.5419	-.1057	-9.4199	.9844
24	♈ Libræ	5½	+74	+19	10 29.6	- 5 14 47	+0.9030	.5421	-.0956	-9.4440	.9826
25	♈ Ophiuchi	5	+13	-45	1 27.7	+ 9 15 10	-0.1780	.5430	-.0752	-9.4487	.9821
25	♈ Scorpii	5	+73	+ 9	6 30.0	- 9 52 3	+0.7427	.5432	-.0681	-9.4776	.9795
25	B.A.C. 5695	6	-17	-90	13 32.0	- 3 3 25	-0.6864	.5437	-.0580	-9.4556	.9815
25	B.A.C. 5771	6½	+16	-39	19 26.1	+ 2 39 29	-0.0731	.5440	-.0493	-9.4764	.9796
26	B.A.C. 5839	6½	+12	-42	1 3.8	+ 8 6 30	-0.1265	.5444	-.0411	-9.4808	.9791
26	B.A.C. 6060	6½	+65	+ 5	18 25.4	+ 0 55 1	+0.6724	.5451	-.0145	-9.5076	.9763
26	♈ Sagittarii	6	-57	-90	21 6.3	+ 3 30 50	-1.1606	.5454	-.0106	-9.4615	.9802
27	B.A.C. 6267	6	- 4	-58	9 52.1	- 8 7 48	-0.3620	.5460	-.0092	-9.4871	.9785
27	B.A.C. 6287	6	+65	+ 5	10 55.4	- 7 6 33	+0.6775	.5460	+0.0108	-9.5084	.9762
27	B.A.C. 6292	6	+71	+18	11 28.2	- 6 34 47	+0.8837	.5461	+0.0118	-9.5124	.9757
27	B.A.C. 6293	6½	+27	-24	11 31.2	- 6 31 51	+0.1779	.5461	+0.0119	-9.4981	.9773
27	B.A.C. 6294	6	+36	-15	11 32.0	- 6 31 9	+0.3333	.5461	+0.0119	-9.5012	.9770
28	♈ Sagittarii	4	+63	+ 2	11 40.7	- 7 8 45	+0.6276	.5468	+0.0489	-9.4921	.9780
28	♈ Sagittarii	5½	+72	+40	11 44.6	- 7 5 0	+1.1334	.5468	+0.0490	-9.5026	.9768
28	♈ Sagittarii	6	- 7	-68	20 51.2	+ 1 44 6	-0.5071	.5470	+0.0626	-9.4557	.9815
28	♈ Sagittarii	5	-13	-82	21 43.2	+ 2 34 27	-0.6305	.5470	+0.0640	-9.4515	.9819
29	♈ Sagittarii	5½	-20	-91	5 8.6	+ 9 45 31	-0.7603	.5471	+0.0747	-9.4361	.9832
29	B.A.C. 6392	6½	- 6	-73	16 6.2	- 3 37 55	-0.5499	.5475	+0.0903	-9.4186	.9845
29	♈ Capricor.	3	- 5	-72	16 12.9	- 3 31 25	-0.5432	.5475	+0.0904	-9.4184	.9845
29	B.A.C. 7063	6	+36	-24	20 33.7	+ 0 40 59	+0.1884	.5476	+0.0966	-9.4268	.9839
30	♈ Capricor.	6	+69	+ 3	0 2.5	+ 4 3 6	+0.6492	.5479	+0.1012	-9.4297	.9837
30	♈ Capricor.	5	+61	- 4	0 58.2	+ 4 56 59	+0.5419	.5479	+0.1025	-9.4246	.9841
30	♈ Aquarii	6	+ 6	-59	10 54.1	- 9 26 16	-0.3824	.5484	+0.1154	-9.3702	.9877
30	♈ Aquarii	6	+38	-23	11 28.6	- 8 52 52	+0.2048	.5484	+0.1163	-9.3851	.9868
30	♈ Aquarii	6	+77	+19	22 31.0	+ 1 48 17	+0.9126	.5489	+0.1298	-9.3664	.9879
31	♈ Capricor.	5½	+78	+11	9 13.1	-11 50 19	+0.7896	.5498	+0.1416	-9.3171	.9904
31	B.A.C. 7620	6	+40	-25	12 36.5	- 8 33 31	+0.1635	.5500	+0.1453	-9.2781	.9920
31	♈ Aquarii	4½	-14	-90	23 41.1	+ 2 9 34	-0.8110	.5512	+0.1561	-9.1669	.9953
31	B.A.C. 7774	6	+65	- 5	23 42.2	+ 2 10 39	+0.5241	.5513	+0.1561	-9.2267	.9937
Apr. 1	♈ Aquarii	5½	+ 3	-68	1 17.3	+ 3 43 42	-0.5131	.5514	+0.1574	-9.1691	.9952
1	♈ Aquarii	6	+56	-13	12 12.2	- 9 43 41	+0.3820	.5531	+0.1665	-9.1246	.9961
2	B.A.C. 8094	6	0	-76	3 26.1	+ 5 0 12	-0.6001	.5562	+0.1766	-8.8666	.9988
2	B.A.C. 8134	6½	+85	+33	6 8.0	+ 7 36 48	+1.1079	.5563	+0.1779	-8.9736	.9981
2	♈ Piscium	6	-43	-90	9 54.9	+11 16 15	-1.2081	.5572	+0.1797	-8.6436	.9996
5	♈ Ceti	4½	+90	+30	11 1.4	+ 9 51 21	+1.0320	.5804	+0.1656	+0.1552	.9955
5	♈ Arietis	5½	+37	-28	16 1.4	- 9 19 31	+0.0469	.5833	+0.1600	+0.2399	.9934
5	B.A.C. 755	6	+47	-19	16 50.7	- 8 31 58	+0.2212	.5836	+0.1591	+0.2380	.9934
5	♈ Arietis	5½	-29	-78	20 58.1	- 4 33 39	-1.0486	.5853	+0.1547	+0.3131	.9906
5	B.A.C. 830	6	+90	+32	23 28.2	- 2 9 8	+1.0406	.5861	+0.1517	+0.2469	.9931
6	♈ Arietis	5	+ 5	-64	0 28.5	- 1 11 6	-0.5273	.05865	+0.1505	+0.3137	.9906

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of Conj.	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D	
					h m	h m s						
Apr. 6	B.A.C. 987	6½	+59	-7	11 27.1	+ 9 22 59	+0.3911	0.5907	+1.1364	+0.3367	9.9895	
7	Wei III. 1085	8½	+90	+24	8 58.0	+ 6 4 49	+0.8578	.5972	+1.029	+0.4032	.9856	
7	Lal. 7702	9½	-34	-73	11 0.0	+ 8 2 5	-1.0902	.5977	+0.0994	+0.4611	.9811	
7	Weis. IV. 24	9	+90	+27	11 34.2	+ 8 34 54	+0.8912	.5979	+0.0982	+0.4097	.9852	
7	Lal. 7753	7½	+46	-14	11 38.8	+ 8 39 23	+0.1872	.5979	+0.0981	+0.4205	.9837	
7	B.A.C. 1281	7	+ 6	-57	11 41.4	+ 8 41 51	-0.5106	.5979	+0.0980	+0.4481	.9822	
7	Rumk. 1103	7	+69	+ 4	11 45.2	+ 8 45 31	+0.5168	.5979	+0.0979	+0.4207	.9844	
7	Rumk. 1108	9	+90	+61	12 10.9	+ 9 10 15	+1.2488	.5980	+0.0973	+0.4011	.9858	
7	Rumk. 1110	9	-34	-73	12 15.6	+ 9 14 47	-1.0902	.5980	+0.0973	+0.4642	.9808	
7	48 Tauri	6	+90	+28	13 36.2	+10 32 12	+0.9095	.5984	+0.0946	+0.4148	.9848	
7	Rumk. 1136	6	+42	-17	14 0.7	+10 55 46	+0.1292	.5984	+0.0940	+0.4371	.9831	
7	γ Tauri	4	+90	+23	15 12.7	-11 54 59	+0.8204	.5987	+0.0919	+0.4214	.9843	
7	55 Tauri	7	+30	-28	15 14.6	-11 53 12	-0.0744	.5987	+0.0919	+0.4455	.9824	
7	Rumk. 1161	7	-33	-73	15 50.6	-11 18 37	-1.0792	.5987	+0.0906	+0.4722	.9810	
7	Rumk. 1163	8	+17	-42	15 53.6	-11 15 39	-0.3031	.5987	+0.0906	+0.4529	.9818	
7	δ Tauri	4	-26	-73	16 26.0	-10 44 33	-0.9963	.5987	+0.0894	+0.4715	.9801	
7	63 Tauri	6	+22	-36	16 38.6	-10 32 28	-0.2134	.5987	+0.0891	+0.4524	.9818	
7	B.A.C. 1351	6½	+40	-18	16 40.0	-10 31 5	+0.1041	.5990	+0.0890	+0.4442	.9825	
7	ε Tauri	6	-16	-73	16 54.0	-10 17 37	-0.8600	.5990	+0.0887	+0.4691	.9803	
7	Lal. 8249	7½	+ 7	-54	17 0.8	-10 11 5	-0.4858	.5990	+0.0886	+0.4601	.9811	
7	Lal. 8256	8	+18	-40	17 3.3	-10 8 42	-0.2877	.5991	+0.0885	+0.4552	.9816	
7	70 Tauri	7	+90	+16	17 32.6	- 9 40 32	+0.6989	.5992	+0.0874	+0.4344	.9826	
7	Lal. 8311	8	+90	+47	17 44.2	- 9 29 23	+1.1298	.5993	+0.0871	+0.4191	.9845	
7	Rumk. 1188	6½	+90	+47	17 44.4	- 9 29 12	+1.1314	.5993	+0.0871	+0.4191	.9845	
7	Rumk. 1189	6½	+23	-34	17 50.2	- 9 23 36	-0.1925	.5993	+0.0870	+0.4545	.9816	
7	71 Tauri	6	+90	+39	17 50.3	- 9 23 28	+1.0459	.5993	+0.0870	+0.4217	.9843	
7	Rumk. 1192	7	+ 7	-54	17 53.0	- 9 20 55	-0.4899	.5994	+0.0869	+0.4621	.9809	
7	Rumk. 1198	6	+90	+51	18 8.4	- 9 6 8	+1.1665	.5994	+0.0866	+0.4191	.9845	
7	Rumk. 1200	7	+90	+45	18 20.3	- 8 54 39	+1.1138	.5994	+0.0863	+0.4210	.9844	
7	Rumk. 1203	7	+62	0	18 37.7	- 8 37 58	+0.4241	.5994	+0.0854	+0.4403	.9828	
7	75 Tauri	6	+58	- 3	18 40.1	- 8 35 36	+0.3698	.5994	+0.0854	+0.4419	.9827	
7	δ Tauri	4½	+90	+20	18 43.4	- 8 32 28	+0.7704	.5994	+0.0853	+0.4313	.9836	
7	ε Tauri	4½	+90	+26	18 47.7	- 8 28 15	+0.8632	.5994	+0.0852	+0.4283	.9838	
7	Rumk. 1210	7	+76	+ 9	18 53.1	- 8 23 8	+0.5852	.5994	+0.0851	+0.4366	.9831	
7	Rumk. 1212	6	-12	-73	18 59.9	- 8 16 39	-0.7945	.5994	+0.0849	+0.4720	.9860	
7	Rumk. 1214	7	-36	-73	19 3.3	- 8 13 19	-1.1079	.5994	+0.0846	+0.4797	.9793	
7	Rumk. 1215	7	-39	-73	19 3.9	- 8 12 48	-1.1379	.5994	+0.0846	+0.4804	.9792	
7	80 Tauri pr.	6	+90	+49	19 21.6	- 7 55 49	+1.1447	.5995	+0.0844	+0.4226	.9842	
7	B.A.C. 1391	5	+78	+10	19 30.8	- 7 46 55	+0.5991	.5995	+0.0837	+0.4377	.9831	
7	81 Tauri	5½	+90	+45	19 33.7	- 7 44 9	+1.1059	.5995	+0.0836	+0.4241	.9841	
7	B.A.C. 1394	7	+84	+13	19 36.2	- 7 41 42	+0.6465	.5995	+0.0835	+0.4367	.9831	
7	Rumk. 1227	7	+90	+36	19 50.6	- 7 27 53	+1.0035	.5995	+0.0832	+0.4276	.9839	
7	85 Tauri	6	+90	+35	20 2.5	- 7 16 28	+0.9826	.5995	+0.0829	+0.4285	.9838	
7	Rumk. 1232	7	+50	- 9	20 14.0	- 7 5 24	+0.2481	.5995	+0.0827	+0.4484	.9821	
7	Rumk. 1233	7	-27	-73	20 19.7	- 6 59 53	-1.0097	.5995	+0.0825	+0.4798	.9793	
7	Rumk. 1235	7	+90	+26	20 25.5	- 6 54 23	+0.8564	.5995	+0.0824	+0.4328	.9835	
7	B.A.C. 1406	7	+74	+ 8	20 44.8	- 6 35 48	+0.5623	.5996	+0.0818	+0.4413	.9828	
7	Rumk. 1238	10	+60	- 1	21 4.4	- 6 16 58	+0.3998	.5997	+0.0812	+0.4463	.9823	
7	Lal. 8599	9	-15	-73	21 8.2	- 6 13 17	-0.8395	.5998	+0.0810	+0.4773	.9795	
7	Lal. 8610	8	+30	-27	21 16.0	- 6 5 48	-0.0771	.5999	+0.0807	+0.4588	.9812	
7	Lal. 8613	8	+19	-39	21 17.3	- 6 4 36	-0.2782	.5999	+0.0807	+0.4640	.9808	
7	α Tauri	1	+63	+ 1	21 39.2	- 5 43 33	+0.4366	.6001	+0.0800	+0.4466	.9823	
7	89 Tauri	7	+90	+35	22 33.4	- 4 51 27	+0.9840	.6001	+0.0783	+0.4340	.9833	
7	α Tauri	5½	+90	+62	22 57.7	- 4 28 6	+1.2459	.6001	+0.0776	+0.4278	.9838	
7	σ Tauri	5½	+90	+48	23 0.3	- 4 25 37	+1.1319	0.6001	+0.0774	+0.4310	9.9836	

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of Conjunction.	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
					h m s	h m s					
Apr. 7	Rumk. 1241		+72	+8	23 14.5	-4 11 57	+0.5427	0.6002	+0.7770	+9.4470	9.9823
7	Rumk. 1243	8	+74	+9	23 26.9	-4 0 4	+0.5645	.6002	+0.7763	+9.4469	.9823
7	Rumk. 1246	7	+17	-40	23 52.9	-3 35 1	-0.3052	.6002	+0.7757	+9.4466	.9802
7	Rumk. 1247		+60	0	23 53.2	-3 34 43	+0.4025	.6002	+0.7757	+9.4519	.9819
8	Rumk. 1254		+64	+2	0 8.4	-3 20 6	+0.4442	.6003	+0.7753	+9.4513	.9819
8	Rumk. 1255		+90	+51	0 9.6	-3 18 59	+1.1582	.6003	+0.7753	+9.4326	.9835
8	Lal. 8352	9½	+25	-32	0 27.2	-3 2 4	-0.1673	.6005	+0.7744	+9.4673	.9805
8	Rumk. 1263	9½	+90	+48	1 3.6	-2 27 4	+1.1301	.6005	+0.7735	+9.4351	.9833
8	Rumk. 1283	7	+86	+15	2 44.3	-0 50 22	+0.6577	.6006	+0.7701	+9.4507	.9820
8	Rumk. 1294		+90	+50	3 35.6	-0 1 2	+1.1387	.6006	+0.683	+9.4397	.9830
8	Rumk. 1299	7½	+16	-41	3 59.0	+0 21 28	-0.3219	.6008	+0.6778	+9.4772	.9795
8	Rumk. 1300		+19	-37	4 1.3	+0 23 39	-0.2665	.6009	+0.6777	+9.4759	.9776
8	B.A.C. 1526	6	+56	-2	6 11.7	+2 28 58	+0.3442	.6009	+0.6635	+9.4644	.9807
8	α Tauri	5½	-23	-72	10 8.2	+6 16 13	-0.9465	.6012	+0.6577	+9.5006	.9771
8	111 Tauri	6	+78	+14	16 55.2	-11 12 42	+0.5939	.6017	+0.420	+9.4722	.9800
8	115 Tauri	5½	+37	-16	18 0.7	-10 9 50	+0.0490	.6017	+0.0398	+9.4863	.9786
8	117 Tauri	6	+90	+26	18 22.1	-9 49 13	+0.7860	.6017	+0.0372	+9.4690	.9803
8	119 Tauri	5½	+4	-52	20 0.0	-8 15 9	-0.5263	.6017	+0.0357	+9.5012	.9770
8	B.A.C. 1728	6½	+90	+42	20 2.7	-8 12 34	+1.0195	.6017	+0.0357	+9.4647	.9807
8	120 Tauri	6	+8	-47	20 31.4	-7 44 59	-0.4579	.6016	+0.0344	+9.5001	.9771
8	122 Tauri	6	+90	+48	21 57.5	-6 22 16	+1.0834	.6016	+0.0317	+9.4648	.9807
9	130 Tauri	6	+66	+9	2 3.8	-2 25 38	+0.4724	.6015	+0.0233	+9.4823	.9790
9	B.A.C. 1930	6½	+77	+16	8 14.0	+3 30 2	+0.5901	.6008	+0.0107	+9.4820	.9790
9	71 Orionis	5½	-22	-71	12 56.6	+8 1 37	-0.9294	.6002	+0.0008	+9.5169	.9752
9	26 Geminor.	5½	+63	+4	23 59.9	-5 20 54	+0.3918	.5984	-0.0197	+9.4846	.9788
10	λ Geminor.	3½	+90	+30	14 27.7	+8 33 29	+0.8782	.5938	-0.0505	+9.4603	.9811
10	B.A.C. 2432	6½	-24	-72	16 27.6	+10 28 49	-1.0002	.5929	-0.0543	+9.5020	.9769
10	63 Geminor.	5½	+90	+57	20 49.4	-9 19 21	+1.1995	.5922	-0.0623	+9.4432	.9826
10	f Geminor.	6	-16	-72	23 11.8	-7 2 18	-0.8488	.5906	-0.0665	+9.4893	.9783
11	1 Cancri	6	+67	+4	6 29.6	-0 1 1	+0.4812	.5876	-0.0798	+9.4440	.9825
11	3 Cancri	6	-47	-73	8 2.6	+1 28 31	-1.2017	.5871	-0.0823	+9.4821	.9790
11	5 Cancri	6	+14	-45	8 21.5	+1 46 44	-0.3602	.5870	-0.0827	+9.4614	.9810
11	B.A.C. 2731	6½	-53	-73	11 54.5	+5 11 51	-1.2627	.5853	-0.0899	+9.4758	.9797
11	29 Leonis	6	+90	+20	19 49.3	-11 10 51	+0.7993	.5818	-0.1018	+9.4028	.9857
12	ε Leonis	6	+52	-13	23 23.2	-8 36 3	+0.2976	.5700	-0.1382	+9.3137	.9906
13	ο Leonis	3½	+90	+42	3 30.9	-4 36 54	+1.1540	.5674	-0.1438	+9.2603	.9827
13	18 Leonis	6	-41	-78	5 49.6	-2 22 59	-1.1746	.5662	-0.1462	+9.3325	.9897
13	B.A.C. 3345	6	-15	-78	6 21.5	-1 52 14	-0.8612	.5661	-0.1466	+9.3193	.9903
13	Α Leonis	5	-12	-80	15 35.6	+7 2 59	-0.8136	.5621	-0.1566	+9.2665	.9925
13	B.A.C. 3538	6½	-11	-81	22 10.3	-10 35 39	-0.7998	.5596	-0.1609	+9.2234	.9938
13	44 Leonis	6	-14	-81	23 33.7	-9 15 2	-0.8449	.5591	-0.1621	+9.2156	.9941
13	B.A.C. 3564	6½	-15	-81	23 43.3	-9 5 45	-0.8594	.5591	-0.1622	+9.2151	.9941
14	48 Leonis	6	+54	-14	4 0.4	-4 57 10	+0.3267	.5573	-0.1653	+9.1233	.9961
14	37 Sextantis	6	+36	-31	9 16.1	+0 8 5	+0.0379	.5557	-0.1686	+9.0962	.9967
14	c Leonis	5	-15	-83	16 9.5	+6 47 52	-0.8682	.5531	-0.1723	+9.0741	.9969
15	τ Leonis	5	+49	-20	5 5.6	-4 41 7	+0.2554	.5492	-0.1773	+8.7961	.9992
15	89 Leonis	6	+6	-68	8 11.4	-1 41 19	-0.5160	.5484	-0.1782	+8.8207	.9990
15	β Virginis	3½	+4	-72	15 59.6	+5 52 1	-0.5590	.5466	-0.1796	+8.6415	.9996
15	B.A.C. 4043	6½	+37	-33	20 5.9	+9 50 26	+0.0177	.5459	-0.1800	+8.3448	9.9999
16	13 Virginis	6	+18	-53	5 38.3	-4 55 8	-0.3023	.5441	-0.1799	-6.9466	0.0000
16	γ Virginis	3½	+5	-70	6 14.9	-4 19 45	-0.5399	.5441	-0.1799	+7.0848	0.0000
16	38 Virginis	6	+14	-57	22 34.3	+11 29 5	-0.3629	.5420	-0.1765	-8.6939	9.9995
17	κ Virginis	6	-2	-80	1 44.4	-9 26 43	-0.6400	.5418	-0.1754	-8.7323	.9994
17	46 Virginis	6½	-42	-90	2 12.3	-8 59 42	-1.1937	.5419	-0.1753	-8.6656	.9995
17	48 Virginis	6	-38	-90	3 50.0	-7 25 2	-1.1636	0.5415	-0.1746	-8.7114	9.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Apr. 17	δ Virginis ϵ .	4 $\frac{1}{2}$	+54	-16	h m s	h m s					
17	66 Virginis	6	-55	-90	6 47.9	- 4 32 38	+0.3366	0.5414	-1.734	-8.9254	9.9085
17	ρ Virginis	5	- 7	-90	13 59.6	+ 2 25 43	-1.2832	.5411	-1.700	-8.8917	.9987
17	α Virginis	6	+58	-10	17 39.8	+ 5 59 3	-0.7256	.5410	-1.680	-8.8774	.9979
17	π Virginis	5	+82	+36	22 24.0	+10 34 29	+1.1387	.5410	-1.651	-9.1454	.9957
18	94 Virginis	6	0	-74	10 34.7	- 1 37 27	-0.5786	.5410	-1.565	-9.1572	.9955
18	95 Virginis	6	+23	-43	10 47.4	- 1 25 11	-0.1555	.5410	-1.564	-9.1787	.9950
18	96 Virginis	6 $\frac{1}{2}$	+81	+10	11 54.0	- 0 20 34	+0.7827	.5410	-1.556	-9.2268	.9937
18	π Virginis	4 $\frac{1}{2}$	+58	-10	13 49.0	+ 1 30 48	+0.4334	.5411	-1.540	-9.2246	.9938
18	ϵ Libræ	6	+79	+46	18 59.3	+ 6 31 23	+1.2235	.5414	-1.496	-9.2447	.9918
19	ζ Libræ	6	- 8	-87	10 13.1	- 2 43 7	-0.6747	.5421	-1.351	-9.2942	.9914
20	α Libræ	6	+76	+39	0 11.6	+10 49 15	+1.1513	.5410	-1.192	-9.4032	.9856
20	γ Libræ	4 $\frac{1}{2}$	+31	-28	6 18.1	- 7 15 45	+0.1046	.5434	-1.124	-9.3940	.9863
20	η Libræ	6	+69	+ 2	10 27.6	- 3 14 3	+0.6400	.5437	-1.069	-9.4199	.9844
20	49 Libræ	5 $\frac{1}{2}$	+74	+13	18 23.8	+ 4 27 9	+0.8130	.5444	-0.967	-9.4440	.9825
21	ϕ Ophiuchi	5	+ 8	-52	9 18.3	- 5 6 30	-0.2807	.5453	-0.766	-9.4487	.9821
21	24 Scorpii	5	+65	+ 2	14 19.4	- 0 14 56	+0.6368	.5455	-0.694	-9.4777	.9795
21	B.A.C. 5695	6	-24	-90	21 19.7	+ 7 32 4	-0.7982	.5458	-0.592	-9.4556	.9815
22	B.A.C. 5771	6 $\frac{1}{2}$	+10	-46	3 12.6	-11 46 16	-0.1889	.5459	-0.504	-9.4765	.9796
22	B.A.C. 5839	6 $\frac{1}{2}$	+ 6	-50	8 49.3	- 6 20 18	-0.2460	.5461	-0.418	-9.4809	.9791
23	B.A.C. 6060	6 $\frac{1}{2}$	+52	- 2	2 8.9	+10 26 17	+0.5437	.5461	-0.154	-9.5676	.9763
23	B.A.C. 6267	6	-11	-69	17 36.4	+ 1 24 10	-0.5003	.5460	+0.089	-9.4871	.9785
23	B.A.C. 6237	6	+52	- 3	18 39.8	+ 2 25 33	+0.5415	.5459	+0.015	-9.5084	.9762
23	B.A.C. 6292	6	+71	+ 9	19 12.7	+ 2 57 23	+0.7478	.5458	+0.011	-9.5124	.9757
23	B.A.C. 6293	6 $\frac{1}{2}$	+19	-32	19 15.7	+ 3 0 19	+0.0402	.5458	+0.012	-9.4980	.9773
24	B.A.C. 6294	6	+23	-23	19 16.4	+ 3 1 2	+0.0959	.5458	+0.012	-9.5012	.9770
25	ϵ Sagittarii	4	+51	- 7	19 32.4	+ 2 30 42	+0.4839	.5446	+0.046	-9.4921	.9780
25	ϵ Sagittarii	5 $\frac{1}{2}$	+72	+26	19 36.2	+ 2 34 24	+0.9917	.5446	+0.046	-9.5026	.9768
25	B.A.C. 6658	6	+72	+52	22 37.7	+ 5 30 4	+1.2257	.5444	+0.0531	-9.5042	.9766
25	ϵ Sagittarii	6	-15	-86	4 47.6	+11 28 15	-0.6581	.5443	+0.022	-9.4557	.9815
25	ϵ Sagittarii	5	-22	-90	5 49.2	-11 40 51	-0.7823	.5441	+0.035	-9.4515	.9819
25	η Sagittarii	5 $\frac{1}{2}$	-29	-90	13 10.3	- 4 25 0	-0.8933	.5439	+0.071	-9.4361	.9832
26	B.A.C. 6992	6 $\frac{1}{2}$	-15	-90	0 16.2	+ 6 19 50	-0.7032	.5433	+0.086	-9.4186	.9845
26	β Capricor.	3	-14	-90	0 23.0	+ 6 26 26	-0.6966	.5432	+0.090	-9.4185	.9845
26	B.A.C. 7063	6	+27	-32	4 47.5	+10 42 33	+0.0401	.5431	+0.059	-9.4268	.9839
26	τ Capricor.	6	+57	- 6	8 19.4	- 9 52 16	+0.5045	.5430	+1.003	-9.4297	.9837
26	τ Capricor.	5	+50	-12	9 15.9	- 8 57 31	+0.3965	.5429	+1.016	-9.4246	.9841
27	8 Aquarii	6	- 2	-71	19 21.4	+ 0 48 51	-0.5323	.5428	+1.144	-9.3701	.9877
27	9 Aquarii	6	+30	-31	19 56.4	+ 1 22 43	+0.0500	.5428	+1.153	-9.3850	.9868
27	18 Aquarii	6	+77	+ 9	7 10.5	-11 44 24	+0.7759	.5430	+1.285	-9.3664	.9879
27	λ Capricor.	5 $\frac{1}{2}$	+74	+ 2	18 4.4	- 1 11 8	+0.6566	.5434	+1.405	-9.3170	.9904
27	B.A.C. 7620	6	+32	-33	21 31.6	+ 2 9 30	+0.0278	.5438	+1.442	-9.2780	.9920
28	8 Aquarii	4 $\frac{1}{2}$	-23	-90	8 48.7	-10 54 54	-0.9465	.5447	+1.549	-9.1668	.9953
28	B.A.C. 7774	6	+58	-13	8 49.8	-10 53 46	+0.3981	.5448	+1.550	-9.2066	.9937
28	9 Aquarii	5 $\frac{1}{2}$	- 4	-82	10 26.8	- 9 19 56	-0.6454	.5450	+1.565	-9.1690	.9952
28	67 Aquarii	6	+58	-20	21 33.6	+ 1 25 41	+0.2645	.5469	+1.656	-9.1246	.9961
29	B.A.C. 8094	6	- 6	-90	13 2.4	- 7 35 14	-0.7083	.5502	+1.757	-8.8666	.9988
29	96 Aquarii	5 $\frac{1}{2}$	+84	+60	14 50.2	- 5 51 9	+1.3161	.5506	+1.768	-9.0083	.9977
30	20 Piscium	6	+87	+52	4 17.9	+ 7 10 13	+1.2788	.5546	+1.826	-8.7858	.9992
30	B.A.C. 8311	6 $\frac{1}{2}$	-33	-90	7 30.0	+10 15 57	-1.1105	.5558	+1.837	-8.0418	0.0000
30	B.A.C. 8365	6 $\frac{1}{2}$	+59	-12	12 16.4	- 9 7 7	+0.4027	.5576	+1.849	-8.3359	.9999
30	B.A.C. 57	6 $\frac{1}{2}$	- 8	-89	18 8.0	- 3 27 19	-0.7674	.5596	+1.858	+8.2190	9.9990
30	Venus	6	+87	+ 4	19 38.2	- 2 0 5	+0.6291	.5146	+1.674	-7.5314	0.0000
30	44 Piscium	6	+14	-58	21 37.7	- 0 4 38	-0.3769	.5613	+1.862	-8.3220	.9999
May 1	73 Piscium	6 $\frac{1}{2}$	-16	-85	15 24.0	- 6 54 47	-0.8247	.5694	+1.843	+8.9251	.9984
1	77 Pisc. pr.	7	+32	-37	15 49.5	- 6 30 11	-0.0524	0.5695	+1.842	+8.8645	9.9988

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
May 1	ϵ Piscium	5½	+ 1	-75	16 58.1	h m s - 5 23 57	-0.5088	0.5699	+0.1839	+8.9354	9.9984
	MERCURY		+90	+19	18 4.0	- 4 20 22	+0.9123	.5184	+0.1611	+8.8044	.9901
2	96 Piscium	6½	0	-76	2 2.0	+ 3 20 51	-0.6253	.5745	+0.1862	+9.0608	.9971
2	μ Piscium	4½	+79	+ 1	2 31.0	+ 3 48 45	+0.6229	.5752	+0.1799	+8.9780	.9980
4	48 Tauri	6	+90	+35	22 20.9	- 2 55 11	+0.9847	.6073	+0.0979	+9.4148	.9848
4	Ramk. 1136	6	+48	-12	22 44.7	- 2 32 18	+0.2159	.6076	+0.0968	+9.4371	.9831
4	γ Tauri	4	+90	+23	23 54.5	- 1 25 21	+0.8991	.6079	+0.0947	+9.4214	.9843
4	55 Tauri	7	+35	-23	23 56.5	- 1 23 27	+0.0169	.6079	+0.0947	+9.4455	.9824
5	Ramk 1163	8	+23	-36	0 34.4	- 0 47 2	-0.2080	.6083	+0.0933	+9.4529	.9818
5	δ Tauri	4	-18	-73	1 5.7	- 0 16 57	-0.8906	.6084	+0.0926	+9.4715	.9801
5	63 Tauri	6	+23	-30	1 18.0	- 0 5 13	-0.1185	.6084	+0.0923	+9.4524	.9818
5	B.A.C. 1351	6½	+36	-22	1 19.3	- 0 3 53	+0.0301	.6084	+0.0922	+0.4486	.9822
5	θ Tauri	6	- 9	-73	1 33.0	+ 0 9 12	-0.7554	.6085	+0.0914	+9.4692	.9803
5	Lal. 8249	7½	+13	-47	1 39.6	+ 0 15 34	-0.3865	.6085	+0.0913	+9.4601	.9811
5	Lal. 8256	8	+23	-35	1 42.0	+ 0 17 49	-0.1910	.6085	+0.0912	+9.4552	.9816
5	θ Tauri	5	-45	-73	2 4.9	+ 0 39 49	-1.1896	.6086	+0.0907	+9.4810	.9791
5	70 Tauri	7	+90	+21	2 10.4	+ 0 45 7	+0.7825	.6086	+0.0905	+9.4305	.9836
5	Lal. 8311	8	+90	+56	2 21.6	+ 0 55 55	+1.2078	.6087	+0.0903	+9.4191	.9845
5	Ramk. 1188	6½	+90	+56	2 21.8	+ 0 56 6	+1.2089	.6087	+0.0898	+0.4191	.9845
5	71 Tauri	6	+90	+46	2 27.6	+ 1 1 37	+1.1251	.6087	+0.0896	+9.4217	.9843
5	Ramk. 1198	6	+90	+61	2 45.1	+ 1 18 27	+1.2445	.6088	+0.0892	+9.4191	.9845
5	75 Tauri	6	+65	+ 2	3 15.9	+ 1 48 1	+0.4595	.6090	+0.0884	+9.4418	.9827
5	δ Tauri	4½	+90	+25	3 19.1	+ 1 51 3	+0.8547	.6090	+0.0884	+9.4313	.9836
5	θ Tauri	4½	+90	+32	3 21.3	+ 1 53 12	+0.9480	.6090	+0.0883	+9.4288	.9838
5	Ramk. 1212	6	- 5	-71	3 35.0	+ 2 6 23	-0.6882	.6091	+0.0876	+9.4720	.9800
5	Ramk. 1215	7	-29	-73	3 38.9	+ 2 10 7	-1.0266	.6091	+0.0874	+9.4804	.9792
5	80 Tauri pr.	6	+90	+58	3 56.1	+ 2 26 34	+1.2246	.6091	+0.0870	+9.4225	.9842
5	B.A.C. 1391	5	+90	+15	4 5.1	+ 2 35 12	+0.6869	.6091	+0.0868	+9.4377	.9831
5	81 Tauri	5½	+90	+53	4 7.8	+ 2 37 51	+1.1866	.6091	+0.0867	+9.4241	.9841
5	B.A.C. 1394	7	+90	+18	4 10.3	+ 2 40 16	+0.7338	.6091	+0.0867	+9.4366	.9831
5	Ramk. 1227	7	+90	+43	4 24.3	+ 2 53 38	+1.0850	.6093	+0.0859	+9.4275	.9830
5	85 Tauri	6	+90	+41	4 35.8	+ 3 4 41	+1.0659	.6093	+0.0856	+9.4285	.9838
5	B.A.C. 1406	7	+85	+13	5 16.8	+ 3 44 2	+0.6519	.6094	+0.0846	+9.4413	.9828
5	Lal. 8610	8	+36	-22	5 47.1	+ 4 13 7	+0.0224	.6097	+0.0833	+9.4589	.9812
5	Lal. 8613	8	+24	-33	5 48.3	+ 4 14 17	-0.1757	.6097	+0.0833	+9.4640	.9808
5	α Tauri	1	+71	+ 6	6 9.5	+ 4 34 39	+0.5294	.6097	+0.0828	+9.4465	.9823
5	89 Tauri	7	+90	+42	7 2.1	+ 5 25 5	+1.0703	.6098	+0.0809	+9.4338	.9834
5	α Tauri	5½	+90	+57	7 28.1	+ 5 50 6	+1.2165	.6100	+0.0798	+9.4308	.9836
5	Ramk. 1241	8	+83	+13	7 41.9	+ 6 3 19	+0.6 61	.6100	+0.0795	+9.4470	.9823
5	Ramk. 1243	8	+84	+16	7 53.9	+ 6 14 50	+0.6578	.6100	+0.0792	+9.4469	.9823
5	Ramk. 1246	7	+23	-34	8 19.2	+ 6 39 4	-0.1991	.6100	+0.0785	+9.4696	.9802
5	Ramk. 1247	7	+63	+ 5	8 19.5	+ 6 39 21	+0.4984	.6101	+0.0785	+9.4518	.9819
5	Ramk. 1254	7	+72	+ 7	8 34.2	+ 6 53 30	+0.5400	.6102	+0.0776	+9.4513	.9819
5	Ramk. 1255	5	+90	+62	8 35.3	+ 6 54 35	+1.2439	.6102	+0.0776	+9.4325	.9835
5	Lal. 8852	9½	+31	-26	8 52.4	+ 7 10 57	-0.0622	.6102	+0.0772	+9.4673	.9805
5	Ramk. 1263	9½	+90	+58	9 27.7	+ 7 44 49	+1.2173	.6104	+0.0758	+9.4351	.9833
5	Ramk. 1276	7	-37	-72	10 27.0	+ 8 41 46	-1.1166	.6107	+0.0738	+9.4956	.9776
5	Ramk. 1283	7	+90	+20	11 5.2	+ 9 18 22	+0.7537	.6107	+0.0728	+9.4506	.9820
5	Ramk. 1299	7½	+23	-34	12 17.6	+10 23 50	-0.2100	.6108	+0.0705	+9.4771	.9795
5	Ramk. 1300	7	+26	-31	12 19.7	+10 29 56	-0.1555	.6108	+0.0704	+9.4759	.9797
5	Ramk. 1302	7	-60	-72	12 21.1	+10 31 14	-1.2526	.6108	+0.0704	+9.5019	.9769
5	B.A.C. 1526	6	+64	+ 3	14 25.7	-11 29 15	+0.4487	.6112	+0.0656	+9.4645	.9808
5	μ Tauri	5½	-13	-72	18 15.0	- 7 49 10	-0.8181	.6118	+0.0581	+9.5005	.9771
6	111 Tauri	6	+90	+20	0 48.9	- 1 31 20	+0.7081	.6122	+0.0439	+9.4722	.9800
6	115 Tauri	5½	+45	- 9	1 52.2	- 0 30 34	+0.1727	0.6122	+0.0416	+9.4863	9.9786

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
May	6 117 Tauri	6	+90	+33	$\begin{smallmatrix} h & m \\ 2 & 12.9 \end{smallmatrix}$	$\begin{smallmatrix} h & m & s \\ - & 0 & 10 & 41 \end{smallmatrix}$	+0.8989	0.6122	+0.0411	+9.4690	9.9803
	6 119 Tauri	5½	+12	-42	$\begin{smallmatrix} 3 & 47.6 \\ + & 1 & 20 & 11 \end{smallmatrix}$	-0.3918	.6123	+0.0374	+9.5013	.9770	
	6 B.A.C. 1723	6½	+90	+52	$\begin{smallmatrix} 3 & 50.2 \\ + & 1 & 22 & 41 \end{smallmatrix}$	+1.1308	.6123	+0.0374	+9.4647	.9867	
	6 120 Tauri	6	+16	-38	$\begin{smallmatrix} 4 & 17.6 \\ + & 1 & 48 & 55 \end{smallmatrix}$	+0.3243	.6122	+0.0366	+9.5001	.9771	
	6 122 Tauri	6	+90	+59	$\begin{smallmatrix} 5 & 41.3 \\ + & 3 & 9 & 12 \end{smallmatrix}$	+1.1962	.6122	+0.0333	+9.4648	.9867	
	6 130 Tauri	6	+79	+16	$\begin{smallmatrix} 9 & 39.5 \\ + & 6 & 57 & 47 \end{smallmatrix}$	+0.5991	.6118	+0.0246	+9.4822	.9790	
	6 B.A.C. 1930	6½	+90	+24	$\begin{smallmatrix} 15 & 37.7 \\ - & 11 & 18 & 37 \end{smallmatrix}$	+0.7216	.6112	+0.0116	+9.4819	.9791	
	6 71 Orionis	5½	-10	-71	$\begin{smallmatrix} 20 & 11.1 \\ - & 6 & 56 & 13 \end{smallmatrix}$	-0.5707	.6105	+0.0619	+9.5169	.9752	
	7 26 Geminor.	5½	+73	+13	$\begin{smallmatrix} 6 & 53.6 \\ + & 3 & 20 & 19 \end{smallmatrix}$	+0.5414	.6076	-0.0213	+9.4846	.9788	
	7 1 Geminor.	3½	+90	+42	$\begin{smallmatrix} 20 & 55.9 \\ - & 7 & 10 & 47 \end{smallmatrix}$	+1.0337	.6023	-0.0504	+9.4603	.9811	
	7 B.A.C. 2432	6½	-13	-72	$\begin{smallmatrix} 22 & 52.5 \\ - & 5 & 18 & 46 \end{smallmatrix}$	-0.8192	.6013	-0.0544	+9.5020	.9769	
	8 f Geminor.	6	-4	-67	$\begin{smallmatrix} 5 & 26.1 \\ + & 0 & 59 & 23 \end{smallmatrix}$	-0.6665	.5981	-0.0674	+9.4893	.9783	
	8 1 Cancri	6	+85	+13	$\begin{smallmatrix} 12 & 33.1 \\ + & 7 & 49 & 55 \end{smallmatrix}$	+0.6525	.5946	-0.0804	+9.4440	.9826	
	8 3 Cancri	6	-27	-73	$\begin{smallmatrix} 14 & 3.9 \\ + & 9 & 17 & 18 \end{smallmatrix}$	-1.0113	.5936	-0.0829	+9.4821	.9790	
	8 5 Cancri	6	+24	-33	$\begin{smallmatrix} 14 & 22.4 \\ + & 9 & 35 & 6 \end{smallmatrix}$	-0.1789	.5935	-0.0837	+9.4614	.9810	
	8 B.A.C. 2731	6½	-32	-73	$\begin{smallmatrix} 17 & 50.7 \\ - & 11 & 4 & 31 \end{smallmatrix}$	-1.0705	.5916	-0.0806	+9.4757	.9777	
	9 29 Cancri	6	+90	+32	$\begin{smallmatrix} 1 & 35.9 \\ - & 3 & 36 & 54 \end{smallmatrix}$	+0.9739	.5871	-0.1026	+9.4027	.9857	
	9 54 Cancri	6½	-58	-74	$\begin{smallmatrix} 11 & 0.6 \\ + & 5 & 26 & 56 \end{smallmatrix}$	-1.2796	.5814	-0.1167	+9.4361	.9832	
10 ε Leonis	6	+66	-3	$\begin{smallmatrix} 4 & 46.8 \\ - & 1 & 25 & 2 \end{smallmatrix}$	+0.4819	.5708	-0.1399	+9.3137	.9866		
10 18 Leonis	6	-23	-78	$\begin{smallmatrix} 11 & 10.5 \\ + & 4 & 45 & 13 \end{smallmatrix}$	-0.9858	.5674	-0.1467	+9.3325	.9867		
10 B.A.C. 3345	6	-3	-76	$\begin{smallmatrix} 11 & 42.2 \\ + & 5 & 15 & 47 \end{smallmatrix}$	-0.6739	.5670	-0.1474	+9.3193	.9904		
10 B.A.C. 3398	6	+90	+60	$\begin{smallmatrix} 15 & 43.3 \\ + & 9 & 8 & 34 \end{smallmatrix}$	+1.2804	.5646	-0.1513	+9.2282	.9939		
10 A Leonis	5	-1	-74	$\begin{smallmatrix} 20 & 53.9 \\ - & 9 & 51 & 22 \end{smallmatrix}$	-0.6302	.5618	-0.1560	+9.2665	.9925		
11 B.A.C. 3538	6½	0	-74	$\begin{smallmatrix} 3 & 28.0 \\ - & 3 & 30 & 33 \end{smallmatrix}$	-0.6203	.5583	-0.1614	+9.2234	.9938		
11 44 Leonis	6	+7	-63	$\begin{smallmatrix} 4 & 51.4 \\ - & 2 & 9 & 56 \end{smallmatrix}$	-0.4928	.5577	-0.1624	+9.2156	.9941		
11 B.A.C. 3562	6½	-4	-79	$\begin{smallmatrix} 5 & 1.1 \\ - & 2 & 0 & 39 \end{smallmatrix}$	-0.6809	.5577	-0.1625	+9.2151	.9941		
11 48 Leonis	6	+67	-5	$\begin{smallmatrix} 9 & 18.5 \\ + & 2 & 8 & 12 \end{smallmatrix}$	+0.5010	.5558	-0.1655	+9.1234	.9961		
11 49 Leonis. pr.	6	-51	-81	$\begin{smallmatrix} 9 & 24.1 \\ + & 2 & 13 & 36 \end{smallmatrix}$	-1.2677	.5554	-0.1656	+9.2092	.9942		
11 37 Sextantis	6	+47	-21	$\begin{smallmatrix} 14 & 35.0 \\ + & 7 & 14 & 17 \end{smallmatrix}$	+0.2090	.5531	-0.1688	+9.0902	.9967		
11 c Leonis	5	-5	-83	$\begin{smallmatrix} 21 & 30.2 \\ - & 10 & 4 & 7 \end{smallmatrix}$	-0.7027	.5501	-0.1723	+9.0741	.9969		
12 τ Leonis	5	+60	-11	$\begin{smallmatrix} 10 & 31.2 \\ + & 2 & 32 & 29 \end{smallmatrix}$	+0.4100	.5455	-0.1773	+8.7861	.9991		
12 89 Leonis	6	+14	-57	$\begin{smallmatrix} 13 & 39.3 \\ + & 5 & 33 & 58 \end{smallmatrix}$	-0.3672	.5445	-0.1781	+8.8208	.9990		
12 β Virginis	3½	+12	-61	$\begin{smallmatrix} 21 & 32.4 \\ - & 10 & 47 & 54 \end{smallmatrix}$	-0.4188	.5424	-0.1795	+8.6415	.9996		
13 B.A.C. 4043	6½	+43	-26	$\begin{smallmatrix} 1 & 41.4 \\ - & 6 & 46 & 40 \end{smallmatrix}$	+0.1545	.5413	-0.1798	+8.3449	.9999		
13 13 Virginis	6	+25	-45	$\begin{smallmatrix} 11 & 20.9 \\ + & 2 & 34 & 50 \end{smallmatrix}$	-0.1794	.5394	-0.1798	-6.9438	0.0000		
13 η Virginis	3½	+11	-61	$\begin{smallmatrix} 11 & 57.9 \\ + & 3 & 10 & 41 \end{smallmatrix}$	-0.4186	.5393	-0.1797	+7.0867	0.0000		
14 38 Virginis	6	+20	-50	$\begin{smallmatrix} 4 & 30.6 \\ - & 4 & 47 & 10 \end{smallmatrix}$	-0.2658	.5372	-0.1764	-8.6838	9.9995		
14 κ Virginis	6	+4	-71	$\begin{smallmatrix} 7 & 43.4 \\ - & 1 & 40 & 19 \end{smallmatrix}$	-0.5493	.5368	-0.1754	-8.7323	.9994		
14 46 Virginis	6½	-33	-90	$\begin{smallmatrix} 8 & 11.6 \\ - & 1 & 12 & 55 \end{smallmatrix}$	-1.1064	.5368	-0.1753	-8.6656	.9995		
14 48 Virginis	6	-31	-90	$\begin{smallmatrix} 9 & 50.7 \\ + & 0 & 23 & 6 \end{smallmatrix}$	-1.0789	.5368	-0.1747	-8.7113	.9994		
14 δ Virginis tr.	4½	+60	-11	$\begin{smallmatrix} 12 & 51.1 \\ + & 3 & 17 & 58 \end{smallmatrix}$	+0.4236	.5365	-0.1735	-8.0254	.9984		
14 66 Virginis	6	-45	-90	$\begin{smallmatrix} 20 & 8.8 \\ + & 10 & 22 & 20 \end{smallmatrix}$	-1.2215	.5365	-0.1709	-8.8017	.9987		
14 ρ Virginis	5	-3	-83	$\begin{smallmatrix} 23 & 51.9 \\ - & 10 & 1 & 20 \end{smallmatrix}$	-0.6624	.5365	-0.1693	-8.9671	.9979		
15 m Virginis	6	+82	+42	$\begin{smallmatrix} 4 & 40.0 \\ + & 5 & 22 & 4 \end{smallmatrix}$	+1.2025	.5365	-0.1635	-9.1453	.9957		
15 94 Virginis	6	+3	-71	$\begin{smallmatrix} 16 & 59.9 \\ + & 6 & 35 & 14 \end{smallmatrix}$	-0.5453	.5372	-0.1573	-9.1572	.9955		
15 95 Virginis	6	+25	-41	$\begin{smallmatrix} 17 & 12.7 \\ + & 6 & 47 & 39 \end{smallmatrix}$	-0.1204	.5373	-0.1572	-9.1787	.9950		
15 96 Virginis	6½	+81	+12	$\begin{smallmatrix} 18 & 20.1 \\ + & 7 & 53 & 0 \end{smallmatrix}$	+0.8200	.5373	-0.1564	-9.2268	.9937		
15 κ Virginis	4½	+61	-9	$\begin{smallmatrix} 20 & 16.4 \\ + & 9 & 45 & 45 \end{smallmatrix}$	+0.4658	.5374	-0.1549	-9.2246	.9938		
16 2 Libræ	6	+79	+49	$\begin{smallmatrix} 1 & 30.2 \\ - & 9 & 10 & 3 \end{smallmatrix}$	+1.2500	.5380	-0.1505	-9.2347	.9918		
16 ξ Libræ	6	-8	-89	$\begin{smallmatrix} 16 & 53.7 \\ + & 5 & 44 & 19 \end{smallmatrix}$	-0.6853	.5395	-0.1362	-9.2942	.9914		
17 ο Libræ	6	+76	+36	$\begin{smallmatrix} 6 & 57.7 \\ - & 4 & 37 & 5 \end{smallmatrix}$	+1.1249	.5414	-0.1211	-9.4032	.9856		
17 γ Libræ	4½	+30	-31	$\begin{smallmatrix} 13 & 67.3 \\ + & 1 & 20 & 4 \end{smallmatrix}$	+0.0596	.5421	-0.1138	-9.3946	.9862		
17 η Libræ	6	+65	-1	$\begin{smallmatrix} 17 & 17.1 \\ + & 5 & 23 & 0 \end{smallmatrix}$	+0.5891	.5427	-0.1088	-9.4199	.9844		
18 49 Libræ	5½	+74	+8	$\begin{smallmatrix} 1 & 15.2 \\ - & 10 & 53 & 53 \end{smallmatrix}$	+0.7476	.5437	-0.0967	-9.4440	.9825		
18 φ Ophiuchi	5	+3	-59	$\begin{smallmatrix} 16 & 11.7 \\ + & 3 & 34 & 29 \end{smallmatrix}$	-0.3752	.5455	-0.0783	-9.4467	.9821		

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
					^h ^m	^h ^m ^s					
May 18	24 Scorpii	5	+57	-4	21 13.1	+ 8 26 20	+0.5354	0.5455	-.0712	+9.4777	9.9796
19	B.A.C. 5695	6	-31	-90	4 13.6	- 8 46 32	-0.9143	.5465	-.0609	+9.4556	.9815
19	29 Ophiuchi	6	+72	+55	6 59.4	- 6 5 57	+1.2457	.5466	-.0569	+9.5056	.9765
19	B.A.C. 5771	6½	+3	-54	10 6.3	- 3 4 58	-0.3133	.5470	-.0524	+9.4765	.9796
19	B.A.C. 5839	6½	-1	-59	15 42.7	+ 2 20 44	-0.3797	.5473	-.0435	+9.4808	.9792
20	B.A.C. 6060	6½	+40	-13	0 1.2	- 4 53 55	+0.3851	.5475	-.0168	+9.5075	.9763
21	B.A.C. 6267	6	-22	-90	0 27.4	+10 2 45	-0.6828	.5471	+0.0080	+9.4871	.9785
21	B.A.C. 6237	6	+38	-14	1 30.8	+11 4 7	+0.3601	.5471	+0.0093	+9.5084	.9762
21	B.A.C. 6232	6	+55	-1	2 3.7	+11 35 57	+0.5838	.5470	+0.0099	+9.5123	.9757
21	B.A.C. 6233	6½	+9	-43	2 6.7	+11 38 53	-0.1403	.5470	+0.0100	+9.4981	.9773
21	B.A.C. 6294	6	+17	-34	2 7.4	+11 39 35	+0.0128	.5470	+0.0100	+9.5013	.9770
22	ε Sagittarii	4	+36	-19	2 24.2	+11 10 4	+0.2730	.5451	+0.0476	+9.4921	.9780
22	φ Sagittarii	5½	+72	+11	2 28.1	+11 13 50	+0.7832	.5450	+0.0477	+9.5026	.9768
22	B.A.C. 6653	6	+72	+28	5 30.0	- 9 50 4	+1.0148	.5445	+0.0522	+9.5043	.9767
22	ε Sagittarii	6	-29	-90	11 41.1	- 3 50 43	-0.8835	.5440	+0.613	+9.4567	.9815
22	α Sagittarii	5	-33	-90	12 33.8	- 2 59 38	-1.0090	.5439	+0.0626	+9.4515	.9819
22	γ Sagittarii	5½	-49	-90	20 6.0	+ 4 18 19	-1.1469	.5430	+0.0732	+9.4360	.9832
23	B.A.C. 6992	6½	-31	-90	7 16.4	- 8 52 20	-0.9465	.5415	+0.0887	+9.4186	.9845
23	β Capricorn.	3	-30	-90	7 23.3	- 8 45 42	-0.9307	.5415	+0.0891	+9.4184	.9846
23	B.A.C. 7063	6	+14	-47	11 50.0	- 4 27 19	-0.2017	.5411	+0.0949	+9.4267	.9839
23	τ Capricorn.	6	+41	-20	15 23.9	- 1 0 5	+0.2639	.5410	+0.0997	+9.4296	.9837
23	τ Capricorn.	5	+34	-26	16 21.0	- 0 4 46	+0.1544	.5406	+0.1066	+9.4246	.9841
24	8 Aquarii	6	-17	-90	2 33.4	+ 0 48 32	-0.7863	.5395	+0.1136	+9.3701	.9877
24	9 Aquarii	6	+17	-46	3 8.9	+10 22 55	-0.1966	.5394	+0.1141	+9.3850	.9868
24	18 Aquarii	6	+62	-5	14 32.7	- 2 34 34	+0.5288	.5385	+0.1275	+9.3664	.9880
25	1 Capricorn.	5½	+55	-12	1 37.8	+ 8 9 58	+0.4079	.5382	+0.1393	+9.3176	.9905
25	B.A.C. 7623	6	+18	-43	5 8.9	+11 34 30	-0.2270	.5382	+0.1426	+9.2780	.9920
25	8 Aquarii	4½	-46	-90	16 40.0	- 1 15 53	-1.2098	.5384	+0.1534	+9.1667	.9953
25	B.A.C. 7774	6	+40	-26	16 41.1	- 1 14 45	+0.1490	.5384	+0.1534	+9.2264	.9937
25	ε Aquarii	5½	-20	-90	18 20.2	+ 0 21 15	-0.9049	.5384	+0.1547	+9.1689	.9952
26	67 Aquarii	6	+34	-33	5 42.5	+11 22 22	+0.0197	.5395	+0.1638	+9.1245	.9961
26	73 Aquarii	6	+82	+43	11 16.9	- 7 13 39	+1.2114	.5403	+0.1676	+9.1385	.9958
26	82 Aquarii	6	+83	+42	15 11.7	- 3 26 16	+1.2053	.5417	+0.1702	+9.1031	.9965
26	B.A.C. 8094	6	-21	-90	21 34.8	+ 2 44 51	-0.9626	.5420	+0.1740	+8.9665	.9988
26	96 Aquarii	5½	+84	+31	23 25.2	+ 4 31 32	+1.0962	.5426	+0.1751	+9.0081	.9977
27	B.A.C. 8134	6½	+85	+10	0 23.5	+ 5 28 11	+0.7889	.5430	+0.1756	+8.9728	.9981
27	20 Piscium	6	+87	+20	13 14.2	- 6 5 36	+1.0728	.5463	+0.1810	+8.7856	.9992
27	B.A.C. 8365	6½	+46	-23	21 25.3	+ 1 49 42	+0.1979	.5493	+0.1817	+8.3355	.9999
28	B.A.C. 57	6½	-22	-89	3 26.2	+ 7 38 51	-0.9763	.5516	+0.1845	+8.2196	.9999
28	44 Piscium	6	+3	-74	7 1.3	+11 6 55	-0.5758	.5530	+0.1848	+8.3224	.9999
29	73 Piscium	6½	-28	-85	1 13.1	+ 4 42 20	-1.0554	.5616	+0.1836	+8.9352	.9984
29	77 Piscium pr.	7	+23	-47	1 39.2	+ 5 7 31	-0.2154	.5621	+0.1836	+8.8646	.9988
29	ε Piscium	5½	-8	-74	2 49.3	+ 6 15 15	-0.7642	.5627	+0.1833	+8.9355	.9984
29	96 Piscium	6½	-9	-84	12 4.3	- 8 48 46	-0.7718	.5679	+0.1801	+9.0609	.9971
29	μ Piscium	4½	+66	-7	12 33.8	- 8 20 19	+0.4867	.5683	+0.1799	+8.9780	.9980
29	B.A.C. 481	6½	+2	-73	15 10.1	- 5 49 30	-0.5943	.5698	+0.1787	+9.0836	.9968
30	64 Ceti	6½	+90	+35	6 30.3	+ 8 58 3	+1.0995	.5796	+0.1687	+9.1406	.9958
30	ε Ceti	4½	+90	+23	7 11.9	+ 9 38 5	+0.9391	.5798	+0.1682	+9.1553	.9955
30	B.A.C. 728	6½	+15	-53	11 31.1	-10 12 7	-0.3574	.5829	+0.1643	+9.2494	.9930
30	B.A.C. 741	6½	+90	+17	12 4.0	- 9 40 30	+0.8535	.5832	+0.1639	+9.1995	.9945
31	ε Arietis	5½	+33	-33	12 11.3	- 9 33 26	-0.0236	.5832	+0.1638	+9.2309	.9933
31	B.A.C. 755	6	+43	-23	13 0.4	- 8 46 6	+0.1531	.5838	+0.1630	+9.2300	.9934
31	31 Arietis	5½	-32	-78	17 6.3	- 4 49 21	-1.0929	.5864	+0.1590	+9.3131	.9906
30	B.A.C. 830	6	+90	+28	19 35.0	- 2 26 9	+0.9931	.5883	+0.1562	+9.2469	.9931
30	38 Arietis	5	+4	-67	20 34.6	- 1 28 46	-0.5601	.5890	+0.1551	+9.3137	.9906

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log $\sin D$	Log $\cos D$
May 31	B.A.C. 987	6½	+59	— 0	7 23.1	+ 8 55 10	+0.3937	0.5961	+0.1416	+9.3367	9.9896
June 3	γ Orionis	5	—42	—71	1 23.7	+ 0 15 3	—1.1561	.6201	+0.0134	+9.5275	.9739
3	68 Orionis	6	—58	—70	4 36.2	+ 3 19 31	.6199	.6199	+0.0662	+9.5301	.9735
3	71 Orionis	5½	— 2	—60	5 40.9	+ 4 21 32	—0.6369	.6197	+0.0039	+9.5169	.9752
3	26 Geminor.	5½	+90	+21	16 4.2	— 9 41 7	+0.6790	.6179	—0.0196	+9.4846	.9768
4	1 Geminor.	3½	+90	+57	5 39.2	+ 3 20 24	+1.1893	.6131	—0.497	+9.4603	.9811
4	B.A.C. 2432	6½	— 2	—63	7 31.9	+ 5 8 30	—0.6321	.6124	—0.0538	+9.5020	.9769
4	f Geminor.	6	+ 8	—51	13 52.0	+11 13 12	—0.4700	.6093	—0.6667	+9.4893	.9783
4	1 Cancri	6	+90	+25	20 44.3	— 6 11 0	+0.8398	.6055	—0.0813	+9.4440	.9826
4	3 Cancri	6	—12	—73	22 12.1	— 4 46 46	—0.7956	.6046	—0.0829	+9.4821	.9790
4	5 Cancri	6	+36	—22	22 29.9	— 4 29 37	+0.0243	.6045	—0.0638	+9.4614	.9810
5	B.A.C. 2731	6½	—15	—73	1 51.0	— 1 16 28	—0.6484	.6026	—0.0899	+9.4757	.9797
5	29 Cancri	6½	+90	+50	9 20.2	+ 5 55 10	+1.1754	.5979	—0.1030	+9.4028	.9857
5	54 Cancri	6½	—27	—74	18 25.7	— 9 20 13	—1.0247	.5913	—0.1181	+9.4361	.9832
6	ξ Leonis	6	+90	+11	11 38.1	+ 7 13 45	+0.7216	.5796	—0.1414	+9.3137	.9906
6	18 Leonis	6	— 6	—78	17 50.5	—10 47 16	—0.7208	.5756	—0.1485	+9.3326	.9897
6	B.A.C. 3345	6	+12	—55	18 21.2	—10 17 36	—0.4125	.5752	—0.1489	+9.3193	.9903
7	A Leonis	5	+14	—53	3 18.0	— 1 39 47	—0.3647	.5694	—0.1577	+9.2665	.9925
7	B.A.C. 3538	6½	+15	—53	9 42.3	+ 4 31 12	—0.3522	.5648	—0.1631	+9.2234	.9938
7	44 Leonis	6	+13	—56	11 4.7	+ 5 50 45	—0.3906	.5641	—0.1641	+9.2159	.9940
7	B.A.C. 3562	6½	+12	—57	11 13.1	+ 5 58 54	—0.4116	.5641	—0.1642	+9.2150	.9941
7	48 Leonis	6	+90	+10	15 24.7	+10 1 55	+0.7580	.5613	—0.1673	+9.1234	.9961
7	49 Leonis. pr.	6	—23	—81	15 30.2	+10 7 11	—0.9908	.5612	—0.1673	+9.2082	.9942
7	37 Sextantis	6	+65	— 7	20 34.6	— 8 58 42	+0.4702	.5583	—0.1705	+9.0902	.9967
8	c Leonis	5	+11	—60	3 21.8	— 2 25 3	—0.4322	.5545	—0.1741	+9.6742	.9969
8	τ Leonis	5	+84	+ 3	16 11.4	+ 9 59 21	+0.6680	.5484	—0.1787	+8.7961	.9991
8	89 Leonis	6	+29	—40	19 16.4	—11 1 34	—0.1045	.5470	—0.1786	+8.8209	.9990
9	β Virginis	3½	+26	—44	3 4.3	+ 3 28 32	—0.1602	.5439	—0.1808	+8.6416	.9996
9	B.A.C. 4043	6½	+60	—12	7 11.2	+ 0 30 29	+0.4067	.5425	—0.1811	+8.3452	9.9999
9	13 Virginis	6	+38	—31	16 47.0	+ 9 48 14	+0.0667	.5395	—0.1808	—6.9397	0.0000
9	η Virginis	3½	+25	—45	17 23.8	+10 23 54	—0.1719	.5391	—0.1807	+7.0896	.0000
10	γ Virginis. pr.	2½	—51	—90	4 11.7	— 3 8 12	—1.2756	.5369	—0.1790	—8.1015	0.0000
10	B.A.C. 4277	6	—53	—90	5 7.6	— 2 14 4	—1.3119	.5365	—0.1788	—8.1684	9.9999
10	33 Virginis	6	+32	—37	9 54.2	+ 2 23 47	—0.0380	.5358	—0.1774	—8.6138	.9995
10	k Virginis	6	+16	—54	13 7.1	+ 5 30 46	—0.3252	.5352	—0.1763	—8.7323	.9994
10	46 Virginis	6½	—16	—90	13 35.4	+ 5 58 10	—0.8814	.5352	—0.1762	—8.6655	.9995
10	48 Virginis	6	—14	—90	15 14.5	+ 7 34 18	—0.8568	.5351	—0.1766	—8.7112	.9994
10	d Virginis. tr.	4½	+79	+ 1	18 15.3	+10 29 33	+0.6383	.5346	—0.1744	—8.9253	.9994
11	65 Virginis	6	—39	—90	0 57.8	— 7 0 10	—1.1700	.5341	—0.1714	—8.6677	.9988
11	66 Virginis	6	—26	—90	1 34.3	— 6 24 50	—1.0153	.5341	—0.1710	—8.8917	.9988
11	ρ Virginis	5	+ 8	—64	5 18.3	— 2 47 35	—0.4629	.5338	—0.1709	—8.9870	.9979
11	94 Virginis	6	+12	—58	22 32.2	—10 5 6	—0.3761	.5339	—0.1581	—9.1572	.9955
11	95 Virginis	6	+35	—32	22 45.1	— 9 52 35	+0.0485	.5340	—0.1580	—9.1787	.9950
11	96 Virginis	6½	+81	+23	23 52.5	— 8 47 17	+0.9888	.5342	—0.1572	—9.2268	.9937
12	α Virginis	4½	+75	0	1 50.1	— 6 53 10	+0.6294	.5342	—0.1557	—9.2246	.9938
12	ϵ^1 Libræ	6	— 1	—73	22 36.4	—10 44 50	—0.5644	.5364	—0.1374	—9.2942	.9914
12	ϵ^2 Libræ	6	—56	—90	23 18.2	+ 9 35 14	—1.2583	.5367	—0.1363	—0.2756	.9921
13	ω^3 Libræ	6	+76	+47	12 48.0	+ 3 0 40	+1.2201	.5384	—0.1225	—9.4032	.9856
13	γ Libræ	4½	+35	—27	18 59.5	+ 9 0 39	+0.1384	.5393	—0.1154	—9.3940	.9862
13	η Libræ	6	+71	+ 3	23 12.1	—10 54 33	+0.6596	.5399	—0.1104	—9.4199	.9844
14	49 Libræ	5½	+74	+12	7 13.4	— 3 8 9	+0.8008	.5414	—0.1004	—9.4440	.9825
14	ϕ Ophiuchi	5	+ 4	—57	22 15.2	+11 25 25	—0.3576	.5314	—0.0803	—9.4488	.9821
15	24 Scorpii	5	+58	— 4	3 18.0	— 7 41 20	+0.5435	.5446	—0.0732	—9.4777	.9795
15	B.A.C. 5695	6	—32	—90	10 20.1	— 0 52 33	—0.9241	.5455	—0.0631	—9.4556	.9815
15	29 Ophiuchi	6	+72	+53	13 6.5	+ 1 48 35	+1.2328	0.5460	—0.0589	—9.5056	9.9765

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
June 15	B.A.C. 5771	6½	+2	-56	16 13.9	+4 50 4	-0.3355	0.5463	-0.0543	-9.4765	9.9796
15	B.A.C. 5839	6½	-3	-62	21 51.1	+10 16 34	-0.4144	.5468	-0.0457	-9.4808	.9792
16	B.A.C. 6060	6½	+36	-17	15 10.5	+3 2 50	+0.3138	.5481	-0.0190	-9.5076	.9763
17	B.A.C. 6267	6½	-29	-90	6 36.0	-6 1 12	-0.7876	.5483	+0.0055	-9.4871	.9785
17	B.A.C. 6267	6	+31	-20	7 39.3	-4 59 57	+0.2540	.5482	+0.0072	-9.5084	.9762
17	B.A.C. 6292	6	+45	-8	8 12.1	-4 28 12	+0.4592	.5482	+0.0078	-9.5124	.9757
17	B.A.C. 6293	6½	+2	-50	8 15.1	-4 25 15	-0.2510	.5481	+0.0079	-9.4981	.9773
17	B.A.C. 6294	6	+11	-40	8 15.8	-4 24 33	-0.0948	.5481	+0.0079	-9.5012	.9770
18	δ Sagittarii	5	+71	+55	6 30.6	-6 52 19	+1.2422	.5468	+0.0428	-9.5167	.9752
18	ϵ' Sagittarii	4	+26	-23	8 29.5	-4 57 12	+0.1173	.5466	+0.0459	-9.4291	.9780
18	ϵ'' Sagittarii	5½	+62	+1	8 33.4	-4 53 27	+0.6279	.5466	+0.0460	-9.5026	.9768
18	B.A.C. 6653	6	+72	+16	11 34.8	-1 57 46	+0.8547	.5465	+0.0505	-9.5043	.9766
18	ϵ' Sagittarii	6	-42	-90	17 45.4	+4 1 5	-1.0580	.5456	+0.0597	-9.4557	.9815
18	ϵ'' Sagittarii	5	-55	-90	18 37.7	+4 51 42	-1.1858	.5455	+0.0610	-9.4514	.9819
19	B.A.C. 6992	6½	-48	-90	13 18.8	-1 2 33	-1.1558	.5429	+0.0872	-9.4186	.9845
19	β Capricor.	3	-48	-90	13 25.6	-0 55 55	-1.1495	.5428	+0.0877	-9.4184	.9846
19	B.A.C. 7063	6	+2	-62	17 52.3	+3 22 26	-0.4166	.5421	+0.0936	-9.4267	.9839
19	γ' Capricor.	6	+28	-32	21 26.3	+6 49 44	+0.0448	.5415	+0.0984	-9.4296	.9837
19	γ'' Capricor.	5	+22	-38	22 23.5	+7 45 6	-0.0662	.5415	+0.0997	-9.4246	.9841
20	8 Aquarii	6	-34	-90	8 36.9	-6 20 32	-1.0259	.5399	+0.1123	-9.3670	.9877
20	9 Aquarii	6	+3	-62	9 12.5	-5 46 4	-0.4281	.5399	+0.1128	-9.3849	.9868
20	18 Aquarii	6	+45	-19	20 39.0	+5 19 8	+0.2903	.5382	+0.1262	-9.3663	.9880
21	1 Capricor.	5½	+38	-26	5 48.5	-9 51 55	+0.1469	.5369	+0.1379	-9.3169	.9904
21	B.A.C. 7627	6	+3	-67	11 21.4	-4 25 35	-0.4954	.5367	+0.1412	-9.2779	.9920
21	B.A.C. 7774	6	+24	-42	23 0.8	+6 52 27	-0.1265	.5358	+0.1519	-9.2265	.9937
22	ϵ Aquarii	5½	-44	-90	0 41.2	+8 29 41	-1.1901	.5358	+0.1534	-9.1688	.9952
22	67 Aquarii	6	+18	-50	12 13.3	-4 19 21	-0.2641	.5357	+0.1621	-9.1244	.9961
22	1 Aquarii	4	+82	+40	16 54.3	+0 13 4	+1.1809	.5358	+0.1653	-9.1585	.9954
22	78 Aquarii	6	+82	+19	17 53.4	+1 10 19	+0.9373	.5358	+0.1660	-9.1384	.9958
22	82 Aquarii	6	+83	+19	21 52.5	+5 2 4	+0.9313	.5360	+0.1685	-9.1030	.9965
23	B.A.C. 8094	6	-49	-90	4 23.3	+11 20 52	-1.2508	.5368	+0.1720	-8.8664	.9968
23	96 Aquarii	5½	+84	+12	6 16.0	-10 49 56	+0.8207	.5369	+0.1730	-9.0080	.9977
23	B.A.C. 8134	6½	+67	-7	7 15.6	-9 52 11	+0.5098	.5369	+0.1735	-8.9733	.9981
23	20 Piscium	6	+87	+11	20 24.4	+2 52 13	+0.8006	.5394	+0.1790	-8.7854	.9992
24	B.A.C. 8365	6½	+30	-39	4 48.4	+11 0 29	-0.0823	.5415	+0.1812	-8.3350	.9990
24	B.A.C. 57	6½	-6	-85	10 59.4	-7 0 14	-0.7369	.5434	+0.1823	+8.2202	.9999
24	44 Piscium	6	-14	-89	14 40.7	-3 25 55	-0.8592	.5446	+0.1826	+8.3230	.9999
25	73 Piscium	6½	-62	-85	9 26.2	-9 16 46	-1.3271	.5525	+0.1816	+8.9353	.9984
25	77 Pisc. pr.	7	+9	-64	9 53.1	-8 50 47	-0.4745	.5526	+0.1815	+8.8648	.9988
25	ϵ Piscium	5½	-26	-85	11 5.4	-6 40 48	-1.0294	.5531	+0.1812	+8.9356	.9984
25	B.A.C. 408	6½	+90	+33	17 44.8	-1 14 38	+1.1061	.5550	+0.1793	+8.8482	.9980
25	96 Piscium	6½	-26	-84	20 38.4	+1 33 8	-1.0238	.5581	+0.1782	+9.0610	.9971
25	μ Piscium	4½	+50	-21	21 8.8	+2 2 31	+0.2530	.5582	+0.1780	+8.9782	.9980
25	B.A.C. 481	6½	-12	-83	23 50.2	+4 38 29	-0.8220	.5600	+0.1769	+9.0837	.9968
26	64 Ceti	6½	+90	+20	15 40.0	-4 4 24	+0.9051	.5698	+0.1675	+9.1406	.9958
26	ξ' Ceti	4½	+90	+10	16 22.8	-3 23 5	+0.7439	.5704	+0.1669	+9.1553	.9955
26	B.A.C. 728	6½	+4	-68	20 50.1	+0 54 50	-0.5612	.5731	+0.1633	+9.2494	.9930
26	B.A.C. 741	6½	+84	+5	21 23.9	+1 27 27	+0.6663	.5737	+0.1628	+9.1995	.9945
26	ξ Arietis	5½	+22	-44	21 31.5	+1 34 45	-0.2218	.5736	+0.1627	+9.2399	.9933
26	B.A.C. 755	6	+32	-34	22 22.1	+2 23 34	-0.0412	.5744	+0.1620	+9.2381	.9934
27	31 Arietis	5½	-58	-78	2 35.3	+6 27 44	-1.2042	.5772	+0.1582	+9.3132	.9906
27	B.A.C. 830	6	+90	+16	5 8.4	+8 55 18	+0.8226	.5786	+0.1557	+9.2470	.9931
27	38 Arietis	5	-7	-76	6 9.8	+9 54 27	-0.7471	.5794	+0.1547	+9.3137	.9906
27	B.A.C. 987	6½	+49	-16	17 16.2	-3 23 41	+0.2420	.5872	+0.1419	+9.3367	.9895
28	Wei III.1085	8½	+90	+22	14 39.3	-6 49 44	+0.8354	0.6019	+0.1099	+9.4032	9.9856

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of C.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
					h m	h m s					
Jan. 28	Lal. 7671	8	-51	-73	16 21.5	- 5 11 30	-1.2385	.6028	+ .1073	+9.4644	.9807
28	Lal. 7677	8	-50	-73	16 25.8	- 5 7 27	-1.2297	.6031	+ .1067	+9.4644	.9807
28	Lal. 7702	9½	-32	-73	16 38.9	- 4 54 47	-1.0787	.6032	+ .1064	+9.4611	.9810
28	Weis. IV. 24	9	+90	+26	17 12.3	- 4 22 43	+0.8835	.6033	+ .1058	+9.4607	.9852
28	Lal. 7753	7½	+46	-15	17 16.9	- 4 18 20	+0.1881	.6034	+ .1056	+9.4205	.9837
28	B.A.C. 1281	7	+ 6	-56	17 19.4	- 4 15 54	-0.5015	.6034	+ .1056	+9.4481	.9821
28	Rumk. 1103	7	+70	+ 3	17 23.2	- 4 12 19	+0.5144	.6038	+ .1051	+9.4208	.9844
28	Rumk. 1108	9	+90	+59	17 48.3	- 3 48 8	+1.2411	.6040	+ .1045	+9.4012	.9858
28	Rumk. 1110	8	-32	-73	17 53.0	- 3 43 42	-1.0703	.6041	+ .1044	+9.4643	.9808
28	48 Tauri	6	+90	+28	19 11.6	- 2 28 8	+0.9137	.6049	+ .1022	+9.4148	.9848
28	Rumk. 1136	6	+43	-17	19 35.6	- 2 6 6	+0.1454	.6050	+ .1012	+9.4372	.9831
28	γ Tauri	4	+90	+23	20 45.9	- 0 57 36	+0.8350	.6057	+ .0992	+9.4214	.9843
28	55 Tauri	7	+32	-27	20 47.7	- 0 55 51	-0.0480	.6057	+ .0991	+9.4456	.9824
28	Rumk. 1161	8	-29	-73	21 22.8	- 0 22 11	-1.0359	.6062	+ .0978	+9.4723	.9800
28	Rumk. 1163	8	+19	-40	21 25.8	- 0 19 19	-0.2698	.6062	+ .0978	+9.4530	.9818
28	δ Tauri	4	-22	-73	21 57.3	+ 0 10 57	-0.9499	.6065	+ .0971	+9.4715	.9801
28	63 Tauri	6	+25	-34	22 9.5	+ 0 22 42	-0.1766	.6066	+ .0968	+9.4525	.9818
28	B.A.C. 1351	6½	+33	-26	22 10.9	+ 0 24 3	-0.0279	.6066	+ .0968	+9.4486	.9821
28	ε Tauri	6	-12	-73	22 24.6	+ 0 37 7	-0.8125	.6068	+ .0963	+9.4692	.9803
28	Lal. 8249	7½	+10	-51	23 31.2	+ 0 43 31	-0.4429	.6069	+ .0958	+9.4601	.9811
28	Lal. 8256	8	+21	-38	22 33.6	+ 0 45 50	-0.2472	.6069	+ .0958	+9.4552	.9816
28	ζ Tauri	5	-53	-73	22 56.6	+ 1 7 55	-1.2437	.6069	+ .0952	+9.4810	.9791
28	70 Tauri	7	+90	+17	23 2.1	+ 1 13 12	+0.7284	.6070	+ .0950	+9.4385	.9836
28	Lal. 8311	8	+90	+49	23 13.4	+ 1 24 2	+1.1545	.6071	+ .0947	+9.4191	.9845
28	Rumk. 1188	6½	+90	+49	23 13.6	+ 1 24 12	+1.1558	.6071	+ .0947	+9.4191	.9845
28	Rumk. 1189		+26	-32	23 19.3	+ 1 29 38	-0.1486	.6072	+ .0945	+9.4546	.9817
28	71 Tauri	6	+90	+41	23 19.4	+ 1 29 44	+1.0720	.6072	+ .0945	+9.4217	.9843
28	Rumk. 1192		+10	-51	23 22.0	+ 1 32 13	-0.4415	.6072	+ .0944	+9.4621	.9809
28	Rumk. 1198	6	+90	+53	23 36.9	+ 1 46 36	+1.1932	.6074	+ .0940	+9.4191	.9845
28	Rumk. 1200		+90	+48	23 48.6	+ 1 57 46	+1.1424	.6076	+ .0936	+9.4209	.9844
29	Rumk. 1203		+65	+ 2	0 5.4	+ 2 13 57	+0.4641	.6076	+ .0932	+9.4403	.9828
29	75 Tauri	6	+61	- 1	0 7.8	+ 2 16 14	+0.4108	.6076	+ .0931	+9.4419	.9827
29	θ Tauri	4½	+90	+22	0 11.0	+ 2 19 17	+0.8059	.6076	+ .0930	+9.4312	.9836
29	θ Tauri	4½	+90	+28	0 13.2	+ 2 21 25	+0.8995	.6076	+ .0930	+9.4288	.9838
29	Rumk. 1212	6	- 7	-72	0 27.0	+ 2 34 37	-0.7345	.6078	+ .0922	+9.4720	.9800
29	Rumk. 1214		-30	-73	0 30.3	+ 2 37 52	-1.0430	.6079	+ .0921	+9.4797	.9793
29	Rumk. 1215	7	-32	-73	0 30.9	+ 2 38 22	-1.0725	.6079	+ .0921	+9.4804	.9792
29	80 Tauri pr.	6	+90	+52	0 48.0	+ 2 54 50	+1.1784	.6081	+ .0917	+9.4225	.9843
29	B.A.C. 1391	5	+83	+12	0 57.0	+ 3 3 28	+0.6419	.6083	+ .0915	+9.4377	.9831
29	81 Tauri	5½	+90	+48	0 59.8	+ 3 6 10	+1.1413	.6083	+ .0914	+9.4242	.9841
29	B.A.C. 1394	7	+90	+15	1 2.3	+ 3 8 31	+0.6891	.6083	+ .0913	+9.4366	.9832
29	Rumk. 1227	7	+90	+39	1 16.2	+ 3 21 54	+1.0418	.6084	+ .0910	+9.4276	.9839
29	85 Tauri	6	+90	+37	1 27.8	+ 3 32 59	+1.0226	.6084	+ .0902	+9.4285	.9838
29	Rumk. 1232		+53	- 7	1 39.0	+ 3 43 44	+0.3003	.6085	+ .0900	+9.4484	.9822
29	Rumk. 1233		-21	-73	1 44.5	+ 3 49 4	-0.3376	.6086	+ .0898	+9.4799	.9793
29	Rumk. 1235		+90	+28	1 50.1	+ 3 54 23	+0.9005	.6084	+ .0897	+9.4328	.9835
29	B.A.C. 1406	7	+80	+11	2 8.8	+ 4 12 21	+0.6128	.6087	+ .0893	+9.4413	.9827
29	Rumk. 1238	10	+65	+ 2	2 27.8	+ 4 30 35	+0.4546	.6091	+ .0883	+9.4463	.9824
29	Lal. 8599	9	- 9	-73	2 31.5	+ 4 34 9	-0.7647	.6091	+ .0882	+9.4773	.9795
29	Lal. 8610	8	+34	-24	2 39.0	+ 4 41 24	-0.0135	.6091	+ .0881	+9.4588	.9812
29	Lal. 8613	8	+23	-35	2 40.2	+ 4 42 33	-0.2112	.6091	+ .0880	+9.4640	.9808
29	α Tauri	1	+68	+ 4	3 1.5	+ 5 2 54	+0.4943	.6093	+ .0875	+9.4466	.9823
29	89 Tauri	7	+90	+39	3 53.9	+ 5 53 17	+1.0382	.6097	+ .0858	+9.4340	.9834
29	α Tauri	5½	+90	+53	4 19.9	+ 6 18 14	+1.1863	.6101	+ .0852	+9.4310	.9836
29	Rumk. 1241		+79	+11	4 33.7	+ 6 31 26	+0.6081	.6104	+ .0843	+9.4470	.9823

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
June 29	Rumk. 1243	8	+82	+12	4 45.6	+ 6 42 54	+0.6305	0.6104	+0.0840	+9.4469	9.9823
29	Rumk. 1246	7	+22	-36	5 10.8	+ 7 7 4	-0.2219	.6104	+0.0834	+9.4606	.9802
29	Rumk. 1247		+67	+ 3	5 11.1	+ 7 7 22	+0.4737	.6104	+0.0834	+9.4519	.9819
29	Rumk. 1254		+70	+ 6	5 25.8	+ 7 21 28	+0.5162	.6107	+0.0825	+9.4513	.9819
29	Rumk. 1255		+90	+57	5 26.9	+ 7 22 31	+1.2184	.6107	+0.0825	+9.4326	.9835
29	Lal. 8852	9½	+30	-27	5 44.0	+ 7 38 51	-0.0827	.6107	+0.0821	+9.4673	.9805
29	Rumk. 1263	9½	+90	+55	6 19.1	+ 8 12 35	+1.1956	.6111	+0.0812	+9.4352	.9833
29	Rumk. 1276		-38	-72	7 18.2	+ 9 9 14	-1.1259	.6115	+0.0792	+9.4956	.9776
29	Rumk. 1283	7	+90	+19	7 56.1	+ 9 45 41	+0.7410	.6116	+0.0778	+9.4507	.9820
29	Rumk. 1294		+90	+58	8 45.6	+10 33 5	+1.2184	.6123	+0.0760	+9.4397	.9829
29	Rumk. 1299	7½	+23	-34	9 8.1	+10 54 42	-0.2131	.6123	+0.0755	+9.4771	.9795
29	Rumk. 1300		+26	-31	9 10.3	+10 56 46	-0.1585	.6124	+0.0754	+9.4759	.9797
29	Rumk. 1302	7	-56	-72	9 11.6	+10 58 3	-1.2514	.6124	+0.0754	+9.5020	.9769
29	B.A.C. 1526	6	+64	+ 3	11 15.6	-11 2 59	+0.4530	.6133	+0.0712	+9.4645	.9808
29	α Taari	5½	-11	-72	15 2.2	- 7 25 42	-0.7876	.6150	+0.0632	+9.5005	.9771
July 2	B.A.C. 2731	6½	- 6	-72	11 50.2	+10 30 48	-0.7088	.6109	-0.0890	+9.4757	.9797
3	54 Cancri	6½	-14	-74	3 57.9	+ 2 0 0	-0.8455	.6015	-1.179	+9.4360	.9832
3	α Cancri	6	-37	-74	6 26.6	+ 4 22 53	-1.1334	.5997	-1.220	+9.4357	.9832
3	ε Leonis	6	+90	+23	20 38.4	- 5 57 56	+0.9110	.5901	-1.424	+9.3137	.9906
4	18 Leonis	6	+ 7	-61	2 38.8	- 0 11 3	-0.5005	.5857	-1.498	+9.3326	.9897
4	B.A.C. 3345	6	+24	-41	3 8.5	+ 0 17 36	-0.1957	.5855	-1.502	+9.3194	.9904
4	α Leonis	5	+27	-39	11 47.7	+ 8 37 48	-0.1344	.5792	-1.594	+9.2665	.9925
4	B.A.C. 3538	6½	+28	-38	17 59.4	- 9 23 54	-0.1132	.5750	-1.648	+9.2234	.9939
4	44 Leonis	6	+26	-41	19 18.2	- 8 7 57	-0.1557	.5744	-1.659	+9.2157	.9941
4	B.A.C. 3562	6½	+25	-41	19 27.3	- 7 59 11	-0.1696	.5740	-1.662	+9.2152	.9941
4	45 Leonis	6	-66	-80	20 20.5	- 7 7 52	-1.3216	.5737	-1.668	+9.2580	.9928
4	ε Leonis	4	-48	-80	22 36.6	- 4 56 35	-1.2485	.5719	-1.686	+9.2392	.9934
4	48 Leonis	6	+90	+26	23 30.7	- 4 4 23	+0.9883	.5712	-1.693	+9.1234	.9962
4	49 Leonis	6	- 6	-80	23 36.7	- 3 58 30	-0.7347	.5699	-1.699	+9.2092	.9942
5	37 Sextantis	6	+90	+ 7	4 30.5	+ 0 45 0	+0.7109	.5679	-1.726	+9.0903	.9967
5	c Leonis	5	+25	-43	11 5.0	+ 7 5 49	-0.1715	.5642	-1.763	+9.0742	.9969
5	τ Leonis	5	+90	+19	23 31.4	- 4 52 59	+0.9264	.5564	-1.810	+8.7962	.9991
6	89 Leonis	6	+44	-25	2 31.2	- 1 59 8	+0.1639	.5550	-1.818	+8.8209	.9990
6	β Virginis	3½	+41	-28	10 6.3	+ 5 21 0	+0.1129	.5514	-1.880	+8.6417	.9996
6	B.A.C. 4043	6½	+85	+ 3	14 6.7	+ 9 13 37	+0.6744	.5497	-1.833	+8.3453	.9999
6	13 Virginis	6	+55	-16	23 28.6	- 5 42 35	+0.3406	.5455	-1.829	-6.9335	0.0000
7	η Virginis	3½	+41	-29	0 4.6	- 5 7 44	+0.1048	.5454	-1.829	+7.0921	0.0060
7	γ Virginis pr.	2½	-23	-90	10 38.9	+ 5 6 29	-0.9879	.5416	-1.809	-8.1000	0.0000
7	B.A.C. 4277	6	-26	-90	11 33.7	+ 5 59 32	-1.0242	.5414	-1.806	-8.1681	0.0000
7	38 Virginis	6	+48	-22	16 15.0	+10 32 6	+0.2353	.5401	-1.793	-8.6937	.9995
7	k Virginis	6	+32	-37	19 24.6	-10 24 15	-0.0502	.5394	-1.781	-8.7322	.9994
7	46 Virginis	6½	+ 1	-76	19 52.4	- 9 57 19	-0.6014	.5393	-1.780	-8.6655	.9995
7	48 Virginis	6	+ 2	-74	21 29.9	- 8 22 49	-0.5777	.5388	-1.773	-8.7112	.9994
8	δ Virginis tr.	4½	+85	+17	0 27.9	- 5 30 25	+0.9022	.5380	-1.760	-8.9253	.9984
8	65 Virginis	6	-17	-90	7 4.7	+ 0 54 10	-0.8943	.5369	-1.730	-8.8678	.9988
8	66 Virginis	6	- 8	-90	7 40.7	+ 1 29 1	-0.7413	.5367	-1.726	-8.8916	.9987
8	λ Virginis	5	+23	-46	11 22.0	+ 5 3 30	-0.1962	.5362	-1.706	-8.9870	.9979
9	94 Virginis	6	+25	-42	4 26.2	- 2 23 39	-0.1259	.5348	-1.594	-9.1572	.9955
9	95 Virginis	6	+50	-18	4 39.0	- 2 11 15	+0.2959	.5348	-1.593	-9.1786	.9950
9	96 Virginis	6½	+81	+46	5 46.5	- 1 5 54	+1.2283	.5348	-1.584	-9.2268	.9937
9	π Virginis	4½	+81	+15	7 42.9	+ 0 46 58	+0.8702	.5348	-1.569	-9.2246	.9938
10	ξ Libræ	6	+11	-56	4 24.8	- 3 9 6	-0.3439	.5353	-1.385	-9.2942	.9914
10	ξ Libræ	6	-32	-90	5 36.5	- 1 59 32	-1.0373	.5355	-1.374	-9.2756	.9921
11	γ Libræ	4½	+47	-16	0 48.4	- 7 23 3	+0.3246	.5422	-1.166	-9.3940	.9862
11	η Libræ	6	+75	+14	5 1.6	- 3 17 41	+0.8379	0.5383	-1.117	-9.4199	9.9844

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
July 11	49 Libræ	5½	+74	+23	13 4.2	+ 4 30 3	+0.9647	0.5394	—1.023	—9.4440	9.9825
12	φ Ophiuchi	5½	+11	—48	4 9.1	— 4 53 21	—0.2199	.5419	—0.0819	—9.4487	.9821
12	24 Scorpii	5	+69	+ 4	9 12.9	+ 0 1 0	+0.6713	.5427	—0.0749	—9.4777	.9795
12	B.A.C. 5771	6½	+ 8	—48	22 11.5	—11 24 57	—0.2329	.5447	—0.0561	—9.4765	.9766
13	B.A.C. 5839	6½	+ 2	—55	3 49.7	— 5 57 25	—0.3230	.5451	—0.0476	—9.4808	.9791
13	B.A.C. 6069	6½	+39	—14	21 11.3	+10 51 6	+0.3701	.5474	—0.0195	—9.5076	.9763
14	B.A.C. 6267	6	—27	—90	12 36.9	+ 1 47 7	—0.7635	.5483	+0.0634	—9.4870	.9785
14	B.A.C. 6257	6	+32	—19	13 40.1	+ 2 48 21	+0.2754	.5483	+0.0651	—9.5083	.9762
14	B.A.C. 6292	6	+46	— 7	14 12.9	+ 3 20 6	+0.4795	.5483	+0.0657	—9.5123	.9777
14	B.A.C. 6293	6½	+ 3	—49	14 15.9	+ 3 23 1	—0.2306	.5483	+0.0658	—9.4880	.9773
14	B.A.C. 6294	6	+12	—39	14 16.6	+ 3 23 41	—0.0744	.5483	+0.0658	—9.5012	.9770
15	d Sagittarii	5	+71	+50	12 29.5	+ 0 53 59	+1.2162	.5480	+0.0409	—9.5166	.9752
15	q ¹ Sagittarii	4	+25	—30	14 28.0	+ 2 48 41	+0.0882	.5480	+0.0439	—9.4121	.9780
15	q ² Sagittarii	5½	+59	0	14 31.9	+ 2 52 27	+0.5981	.5480	+0.0440	—9.5126	.9763
15	B.A.C. 6658	6	+72	+13	17 32.7	+ 5 47 29	+0.8183	.5478	+0.0486	—9.5042	.9766
15	e ¹ Sagittarii	6	—47	—90	23 41.5	+11 44 33	—1.1054	.5474	+0.0579	—9.4557	.9815
16	e ² Sagittarii	5	—61	—90	0 33.9	—11 24 44	—1.2345	.5473	+0.0592	—9.4515	.9819
16	B.A.C. 6992	6½	—63	—90	19 9.3	+ 6 35 23	—1.2414	.5451	+0.0858	—9.4185	.9845
16	γ Capricor.	3	—59	—90	19 16.1	+ 6 42 0	—1.2351	.5451	+0.0859	—9.4184	.9845
16	B.A.C. 7063	6	— 3	—63	23 41.3	+10 58 49	—0.5112	.5446	+0.0921	—9.4267	.9839
17	τ ¹ Capricor.	6	+22	—38	3 14.1	— 9 35 8	—0.0570	.5441	+0.0667	—9.4266	.9837
17	τ ² Capricor.	5	+16	—45	4 10.9	— 8 40 7	—0.1697	.5440	+0.0739	—9.4245	.9841
17	B.A.C. 7145	6½	+74	+44	4 47.9	— 8 4 10	+1.1877	.5439	+0.0989	—9.4556	.9815
17	8 Aquarii	6	—45	—90	14 20.7	+ 1 10 35	—1.1476	.5426	+0.1109	—9.3701	.9877
17	9 Aquarii	6	— 4	—73	14 56.1	+1 44 53	—0.5516	.5424	+0.1117	—9.3849	.9868
18	18 Aquarii	6	+36	—27	2 18.6	—11 13 49	+0.1368	.5409	+0.1250	—9.3663	.9879
18	λ Capricor.	5½	+29	—36	13 24.9	— 0 28 9	—0.0149	.5401	+0.1373	—9.3169	.9844
18	B.A.C. 7620	6	— 7	—85	16 56.9	+ 2 57 21	—0.6639	.5393	+0.1405	—9.2779	.9820
19	e ¹ Aquarii	6	+79	+36	1 22.4	+11 7 15	+1.1400	.5379	+0.1483	—9.2865	.9812
19	B.A.C. 7774	6	+14	—54	4 34.4	— 9 46 42	—0.3112	.5377	+0.1511	—9.2264	.9937
19	67 Aquarii	6	+ 7	—65	17 46.3	+ 3 0 57	—0.4669	.5368	+0.1613	—9.1244	.9961
19	λ Aquarii	4	+82	+22	22 27.7	+ 7 33 43	+0.9777	.5365	+0.1645	—9.1184	.9844
19	78 Aquarii	6	+82	+ 6	23 26.8	+ 8 31 4	+0.7321	.5365	+0.1652	—9.1383	.9958
20	81 Aquarii	6	+82	+37	2 51.9	+11 49 55	+1.1513	.5364	+0.1672	—9.1308	.9960
20	82 Aquarii	6	+83	+ 6	3 26.5	—11 36 34	+0.7223	.5364	+0.1676	—9.1029	.9865
20	φ Aquarii	4½	+84	+37	9 20.2	— 5 53 39	+1.1556	.5364	+0.1706	—9.0708	.9970
20	96 Aquarii	5½	+75	— 1	11 52.1	— 3 26 26	+0.6034	.5366	+0.1720	—9.0679	.9877
20	B.A.C. 8134	6½	+51	—19	12 52.0	— 2 28 22	+0.2903	.5367	+0.1725	—8.9732	.9881
21	20 Piscium	6	+73	— 3	2 7.0	+10 22 11	+0.5735	.5375	+0.1776	—8.7852	.9892
21	B.A.C. 8365	6½	+17	—54	10 36.6	— 5 23 55	—0.3198	.5389	+0.1798	—8.3345	.9999
21	44 Piscium	6	—32	—89	20 37.4	+ 4 18 11	—1.1076	.5410	+0.1811	+8.3234	.9999
21	10 Ceti	6	+89	+33	21 13.2	+ 4 52 50	+1.1110	.5410	+0.1811	+8.1356	.9999
22	77 Pisc. pr.	7	— 6	—86	16 12.0	— 0 44 24	—0.7213	.5466	+0.1796	+8.8649	.9808
22	e Piscium	5½	—52	—85	17 26.0	+ 0 27 12	—1.2829	.5473	+0.1793	+8.9358	.9964
23	B.A.C. 408	6½	+90	+16	0 15.0	+ 7 3 1	+0.8806	.5499	+0.1774	+8.8484	.9989
23	96 Piscium	6½	—51	—84	3 13.0	+ 9 55 12	—1.2753	.5511	+0.1762	+9.0611	.9971
23	μ Piscium	4½	+36	—33	3 44.2	+10 25 26	+0.0182	.5513	+0.1760	+8.9783	.9886
23	B.A.C. 481	6½	—29	—83	6 29.8	—10 54 29	—1.0695	.5527	+0.1748	+9.0833	.9863
23	64 Ceti	6½	+88	+ 6	22 47.2	+ 4 50 30	+0.6915	.5609	+0.1655	+9.1408	.9958
23	ε ¹ Ceti	4½	+70	— 3	23 31.4	+ 5 33 9	+0.5288	.5614	+0.1649	+9.1554	.9955
24	B.A.C. 728	6½	—10	—80	4 7.2	+ 9 59 31	—0.7916	.5636	+0.1614	+9.2495	.9930
24	B.A.C. 741	6½	+64	— 7	4 42.1	+10 33 14	+0.4549	.5642	+0.1610	+9.1936	.9945
24	ε Arietis	5½	+10	—59	4 49.9	+10 40 48	—0.4464	.5642	+0.1608	+9.2400	.9833
24	B.A.C. 755	6	+20	—47	5 42.2	+11 31 17	—0.2623	.5648	+0.1601	+9.2381	.9934
24	B.A.C. 830	6	+79	+ 4	12 41.9	— 5 43 34	+0.6219	0.5690	+0.1538	+9.2470	.9931

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
July 24	38 Arietis	5	-22	-78	13 45.3	- 4 42 22	-0.9710	0.5695	+ .1528	+9.3137	9.9906
25	B.A.C. 987	6½	+37	-26	1 14.5	+ 6 22 23	+0.0464	.5780	+ .1394	+9.3368	.9895
25	f Tauri	4	+90	+54	9 33.0	- 9 37 15	+1.2320	.5824	+ .1297	+9.3346	.9896
25	Wei. III. 1085	8½	+89	+12	23 22.4	+ 3 41 16	+0.6809	.5913	+ .1092	+9.4032	.9856
26	Weis. IV. 24	9	+90	+16	2 0.7	+ 6 13 35	+0.7343	.5928	+ .1052	+9.4098	.9852
26	Lal. 7753	7½	+36	-23	2 5.5	+ 6 18 8	+0.0284	.5928	+ .1052	+9.4295	.9837
26	B.A.C. 1281	7	- 4	-71	2 8.1	+ 6 20 37	-0.6714	.5928	+ .1051	+9.4481	.9822
26	Rumk. 1103	7	+57	- 5	2 11.9	+ 6 24 20	+0.3598	.5928	+ .1050	+9.4208	.9844
26	Rumk. 1108	9	+90	+43	2 41.2	+ 6 52 30	+1.1031	.5932	+ .1039	+9.4012	.9858
26	Rumk. 1110		-53	-73	2 42.7	+ 6 53 57	-1.2474	.5933	+ .1039	+9.4643	.9808
26	Rumk. 1123	8½	+90	+55	3 25.1	+ 7 34 40	+1.2145	.5937	+ .1027	+9.4002	.9858
26	48 Tauri	6	+90	+18	4 4.1	+ 8 12 14	+0.7679	.5943	+ .1018	+9.4149	.9848
26	Rumk. 1136	6	+34	-25	4 28.9	+ 8 36 4	-0.0110	.5945	+ .1009	+9.4372	.9831
26	γ Tauri	4	+90	+14	5 41.6	+ 9 45 57	+0.6907	.5951	+ .0989	+9.4214	.9843
26	55 Tauri	7	+23	-36	5 43.4	+ 9 47 46	-0.2052	.5951	+ .0989	+9.4456	.9824
26	58 Tauri	6	+90	+62	6 1.9	+10 5 32	+1.2563	.5953	+ .0985	+9.4064	.9854
26	Rumk. 1161		-47	-73	6 19.7	+10 22 36	-1.2664	.5954	+ .0980	+9.4722	.9800
26	Rumk. 1163	8	+13	-51	6 22.8	+10 25 35	-0.4291	.5955	+ .0977	+9.4530	.9818
26	δ Tauri	4	-36	-73	6 55.4	+10 56 55	-1.1181	.5958	+ .0969	+9.4715	.9801
26	63 Tauri	6	+16	-44	7 8.0	+11 9 5	-0.3333	.5959	+ .0966	+9.4524	.9818
26	B.A.C. 1351	6½	+24	-35	7 9.4	+11 10 28	-0.1823	.5959	+ .0966	+9.4486	.9821
26	δ Tauri	6	-24	-73	7 23.5	+11 24 0	-0.9781	.5961	+ .0959	+9.4632	.9803
26	Lal. 8249	7½	0	-64	7 30.4	+11 30 37	-0.6030	.5963	+ .0957	+9.4601	.9811
26	Lal. 8256	8	+12	-49	7 32.9	+11 36 0	-0.4043	.5964	+ .0956	+9.4552	.9816
26	70 Tauri	7	+77	+ 8	8 2.4	-11 58 40	+0.5867	.5965	+ .0950	+9.4305	.9836
26	Lal. 8311	8	+90	+36	8 14.0	-11 47 29	+1.0191	.5965	+ .0947	+9.4191	.9845
26	Rumk. 1188	6½	+90	+37	8 14.2	-11 47 17	+1.0205	.5965	+ .0947	+9.4191	.9845
26	Rumk. 1189		+18	-42	8 20.0	-11 41 41	-0.3028	.5965	+ .0946	+9.4546	.9816
26	71 Tauri	6	+90	+30	8 20.1	-11 41 34	+0.9358	.5966	+ .0946	+9.4216	.9843
26	Rumk. 1192		+ 1	-63	8 22.8	-11 38 59	-0.5998	.5968	+ .0941	+9.4622	.9809
26	Rumk. 1198	6	+90	+40	8 38.3	-11 24 6	+1.0588	.5969	+ .0937	+9.4191	.9845
26	Rumk. 1200		+90	+36	8 50.3	-11 12 33	+1.0074	.5969	+ .0935	+9.4210	.9844
26	Rumk. 1203		+54	- 6	9 7.7	-10 55 48	+0.3200	.5969	+ .0931	+9.4403	.9828
26	75 Tauri	6	+51	- 9	9 10.2	-10 53 27	+0.2661	.5970	+ .0930	+9.4419	.9827
26	δ Tauri	4½	+87	+13	9 13.5	-10 50 19	+0.6668	.5970	+ .0930	+9.4313	.9836
26	δ Tauri	4½	+90	+19	9 15.8	-10 48 5	+0.7619	.5970	+ .0929	+9.4288	.9838
26	Rumk. 1210		+67	+ 2	9 23.2	-10 40 56	+0.4829	.5972	+ .0923	+9.4367	.9832
26	Rumk. 1212	6	-18	-73	9 30.0	-10 34 25	-0.8952	.5974	+ .0922	+9.4720	.9801
26	Rumk. 1214		-47	-73	9 33.5	-10 31 4	-1.2081	.5975	+ .0921	+9.4797	.9793
26	Rumk. 1215	7	-52	-73	9 34.0	-10 30 33	-1.2379	.5975	+ .0921	+9.4803	.9792
26	80 Tauri pr.	6	+90	+30	9 51.7	-10 13 31	+1.0459	.5980	+ .0917	+9.4225	.9843
26	B.A.C. 1391	5	+68	+ 4	10 1.0	-10 4 35	+0.5020	.5983	+ .0915	+9.4377	.9831
26	81 Tauri	5½	+90	+36	10 3.9	-10 1 53	+1.0086	.5983	+ .0914	+9.4242	.9841
26	B.A.C. 1394	7	+73	+ 6	10 6.5	- 9 59 20	+0.5499	.5984	+ .0913	+9.4366	.9832
26	Rumk. 1227	7	+90	+29	10 20.9	- 9 45 29	+0.9082	.5988	+ .0910	+9.4276	.9839
26	85 Tauri	6	+90	+28	10 32.8	- 9 34 1	+0.8890	.5992	+ .0903	+9.4286	.9838
26	Rumk. 1232		+44	-15	10 44.4	- 9 22 56	+0.1567	.5995	+ .0901	+9.4484	.9822
26	Rumk. 1233		-35	-73	10 50.1	- 9 17 27	-1.0988	.5990	+ .0899	+9.4799	.9793
26	Rumk. 1235		+90	+19	10 55.8	- 9 11 55	+0.7658	.5981	+ .0898	+9.4328	.9835
26	B.A.C. 1406	7	+66	+ 2	11 15.2	- 8 53 20	+0.4742	.5983	+ .0894	+9.4414	.9828
26	Rumk. 1238	10	+54	- 6	11 34.8	- 8 34 29	+0.3146	.5984	+ .0885	+9.4462	.9824
26	Lal. 8599	9	-20	-73	11 38.6	- 8 30 47	-0.9221	.5985	+ .0884	+9.4774	.9795
26	Lal. 8610	8	+26	-33	11 46.4	- 8 23 17	-0.1599	.5986	+ .0882	+9.4589	.9812
26	Lal. 8613	8	+14	-45	11 47.7	- 8 22 5	-0.3604	.5988	+ .0882	+9.4640	.9808
26	α Tauri	1	+57	- 4	12 9.6	- 8 1 2	+0.3559	.5988	+ .0877	+9.4466	.9823

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
July	26 89 Tauri	7	+90	+20	13 3.8	— 7 9 0	+0.9091	0.5993	+0.0860	+9.4340	9.9834
	26 α ¹ Tauri	5½	+90	+51	13 28.0	— 6 45 39	+1.1730	.5995	+0.0850	+9.4278	.9838
	26 α ² Tauri	5½	+90	+41	13 30.6	— 6 43 9	+1.0597	.5996	+0.0849	+9.4310	.9836
	26 Runk. 1241		+66	+ 3	13 44.8	— 6 29 31	+0.4740	.5997	+0.0846	+9.4470	.9823
	26 Runk. 1243	8	+68	+ 4	13 57.1	— 6 17 41	+0.4972	.5998	+0.0843	+9.4469	.9823
	26 Runk. 1246	7	+14	—45	14 23.1	— 5 52 42	—0.3667	.6002	+0.0832	+9.4686	.9802
	26 Runk. 1247		+56	— 4	14 23.5	— 5 52 23	+0.3388	.6002	+0.0832	+9.4519	.9819
	26 Runk. 1254		+59	— 2	14 38.6	— 5 37 48	+0.3824	.6003	+0.0829	+9.4514	.9819
	26 Runk. 1255		+90	+44	14 39.8	— 5 36 43	+1.0945	.6004	+0.0829	+9.4326	.9835
	26 Lal. 8852	9½	+22	—36	14 57.3	— 5 19 51	—0.2244	.6005	+0.0825	+9.4673	.9805
	26 Runk. 1263	9½	+90	+42	15 33.6	— 4 44 59	+1.0728	.6009	+0.0811	+9.4352	.9833
	26 Runk. 1263	8½	+90	+61	16 7.7	— 4 12 15	+1.2419	.6012	+0.0803	+9.4319	.9835
	26 Runk. 1276		—65	—72	16 34.5	— 3 46 25	—1.2701	.6015	+0.0792	+9.4957	.9776
	26 Runk. 1283	7	+80	+12	17 13.7	— 3 8 49	+0.6147	.6018	+0.0783	+9.4508	.9820
	26 Runk. 1294		+90	+45	18 4.7	— 2 19 50	+1.1000	.6023	+0.0766	+9.4387	.9829
	26 Runk. 1299	7½	+15	—43	18 27.9	— 1 57 30	—0.3503	.6026	+0.0756	+9.4772	.9795
	26 Runk. 1300		+18	—40	18 30.1	— 1 55 22	—0.2349	.6026	+0.0756	+9.4759	.9797
	26 B.A.C. 1526	6	+55	— 4	20 39.4	+ 0 8 45	+0.3244	.6037	+0.0715	+9.4645	.9807
	27 α ¹ Tauri	5½	—20	—72	0 32.8	+ 3 52 55	—0.9239	.6056	+0.0637	+9.5006	.9770
	27 111 Tauri	6	+86	+17	7 11.9	+10 16 4	+0.6575	.6087	+0.0505	+9.4722	.9800
	27 115 Tauri	5½	+42	—12	8 15.8	+11 17 21	+0.1272	.6090	+0.0483	+9.4863	.9786
	27 117 Tauri	6	+90	+29	8 36.7	+11 37 25	+0.8570	.6091	+0.0472	+9.4690	.9803
	27 119 Tauri	5½	+10	—45	10 12.0	—10 51 7	—0.4253	.6098	+0.0442	+9.5012	.9770
	27 B.A.C. 1728	6½	+90	+48	10 14.6	—10 48 35	+1.1003	.6098	+0.0441	+9.4648	.9807
	27 120 Tauri	6	+15	—40	10 42.5	—10 21 49	—0.3538	.6104	+0.0428	+9.5001	.9771
	27 122 Tauri	6	+90	+56	12 6.2	— 9 1 34	+1.1768	.6107	+0.0401	+9.4648	.9807
	27 130 Tauri	6	+89	+15	16 4.7	— 5 12 45	+0.6749	.6122	+0.0315	+9.4823	.9790
	27 B.A.C. 1930	6½	+90	+26	22 1.0	+ 0 29 4	+0.7647	.6136	+0.0185	+9.4820	.9790
	27 γ ² Orionis	5	—54	—71	22 9.9	+ 0 37 36	—1.2337	.6136	+0.0183	+9.5275	.9738
	28 71 Orionis	5½	— 5	—66	2 31.4	+ 4 43 25	—0.6901	.6149	+0.0022	+9.5169	.9752
Aug.	28 26 Geminor.	5½	+90	+21	13 0.9	— 9 8 0	+0.6801	.6162	—0.0150	+9.4846	.9787
	29 1 Geminor.	3½	+90	+66	2 35.0	+ 3 52 29	+1.2482	.6162	—0.0455	+9.4603	.9811
	31 A Leonis	5	+33	—32	21 53.4	— 3 24 24	—0.0206	.5857	—0.1505	+9.2666	.9824
	1 B.A.C. 3538	6½	+34	—31	3 57.3	+ 2 22 6	+0.0111	.5824	—0.1654	+9.2234	.9838
	1 44 Leonis	6	+33	—33	5 14.4	+ 3 36 20	—0.0287	.5818	—0.1665	+9.2157	.9940
	1 B.A.C. 3562	6½	+32	—34	5 23.3	+ 3 44 53	—0.0423	.5816	—0.1668	+9.2152	.9941
	1 45 Leonis	6	—40	—80	6 15.3	+ 4 35 0	—1.1825	.5813	—0.1675	+9.2580	.9828
	1 ε Leonis	4	—33	—80	8 28.3	+ 6 43 12	—1.1056	.5796	—0.1694	+9.2391	.9834
	1 48 Leonis	6	+90	+36	9 21.1	+ 7 34 8	+1.1112	.5793	—0.1699	+9.1234	.9861
	1 49 Leonis	6	+ 2	—72	9 26.3	+ 7 39 7	—0.5957	.5790	—0.1701	+9.2092	.9942
	1 37 Sextantis	6	+90	+16	14 13.9	—11 43 42	+0.8439	.5764	—0.1735	+9.0903	.9867
	1 ε Leonis	5	+33	—34	20 38.4	— 5 32 42	—0.0196	.5723	—0.1776	+9.0742	.9869
	2 τ Leonis	5	+90	+31	8 45.1	+ 6 8 43	+1.0797	.5655	—0.1828	+8.7763	.9991
	2 89 Leonis	6	+55	—16	11 39.9	+ 8 57 35	+0.3324	.5639	—0.1836	+8.8210	.9990
	2 MARS		+56	—14	18 56.1	— 8 1 5	+0.3602	.5365	—0.1741	+8.6334	.9996
	2 β Virginis	3½	+52	—18	19 2.5	— 7 54 54	+0.2905	.5603	—0.1850	+8.6418	.9996
	2 B.A.C. 4043	6½	+90	+14	22 56.2	— 4 9 0	+0.8494	.5583	—0.1854	+8.3454	.9999
	3 13 Virginis	6	+69	— 6	8 2.4	+ 4 39 8	+0.5286	.5542	—0.1851	+6.9360	.0000
	3 η Virginis	3½	+52	—19	8 37.4	+ 5 12 58	+0.2954	.5539	—0.1850	+7.0957	.0000
	3 γ Virginis pr.	2½	— 9	—90	18 54.4	— 8 50 10	—0.7761	.5499	—0.1832	—8.1000	.0000
	3 B.A.C. 4277	6	—11	—90	19 47.7	— 7 58 37	—0.8115	.5495	—0.1829	—8.1679	.9999
	4 38 Virginis	6	+62	—10	0 21.7	— 3 33 29	+0.4351	.5480	—0.1815	—8.6136	.9995
	4 ε Virginis	6	+43	—26	3 26.3	— 0 34 48	+0.1547	.5470	—0.1813	—8.7321	.9994
	4 46 Virginis	6½	+13	—59	3 53.4	— 0 8 33	—0.3897	.5469	—0.1802	—8.6654	.9995
	4 48 Virginis	6	+14	—57	5 28.4	+ 1 23 26	—0.3656	.5463	—0.1794	—8.7111	.9994

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of 6.	At Washington Mean Time of Conjunction.						Log sin D	Log cos D
			North-ern.	South-ern.		H	I	p'	q'				
					h m	h m s							
Aug. 4	δ Virginis tr.	4 $\frac{1}{2}$	+85	+39	8 21.8	+ 4 11 19	+1.0982	0.5455	-.1792	-8.0252	9.9784		
4	65 Virginis	6 $\frac{1}{2}$	- 2	-82	14 49.0	+10 26 9	-0.6755	.5439	-.1750	-8.8676	.9788		
4	66 Virginis	6	+ 5	-69	15 24.1	+11 0 11	-0.5242	.5437	-.1746	-8.8915	.9987		
4	β Virginis	5	+34	-34	19 0.2	- 9 30 32	+0.0155	.5430	-.1727	-8.9670	.9079		
4	80 Virginis	6	-40	-90	20 43.8	- 7 50 14	-1.1841	.5429	-.1717	-8.9152	.9985		
5	94 Virginis	6	+37	-30	11 42.9	+ 6 40 38	+0.0855	.5401	-.1611	-9.1571	.9955		
5	95 Virginis	6	+64	- 7	11 55.4	+ 6 52 47	+0.5036	.5400	-.1610	-9.1786	.9950		
5	π Virginis	4 $\frac{1}{2}$	+81	+39	14 55.8	+ 9 47 33	+1.0715	.5398	-.1586	-9.2245	.9938		
6	ζ^1 Libræ	6 $\frac{1}{2}$	+22	-43	11 18.1	+ 5 31 52	-0.1380	.5386	-.1401	-9.2942	.9914		
6	ξ^2 Libræ	6	-17	-90	12 28.9	+ 6 40 28	-0.6266	.5386	-.1386	-9.2755	.9921		
7	γ Libræ	4 $\frac{1}{2}$	+60	- 6	7 28.8	+ 1 4 58	+0.5137	.5303	-.1175	-9.3940	.9862		
7	η Libræ	6 $\frac{1}{2}$	+75	+27	11 40.1	+ 5 8 23	+1.0177	.5303	-.1125	-9.4198	.9844		
7	48 Libræ	4 $\frac{1}{2}$	-54	-90	18 37.3	+11 52 38	-1.2173	.5399	-.1039	-9.3804	.9671		
7	49 Libræ	5 $\frac{1}{2}$	+74	+39	19 39.8	-11 6 54	+1.1413	.5401	-.1026	-9.4440	.9625		
8	ϕ Ophiuchi	5	+21	-38	10 41.1	+ 3 26 13	-0.0516	.5415	-.0826	-9.4487	.9820		
8	24 Scorpii	5	+73	+14	15 44.3	+ 8 19 52	+0.8310	.5421	-.0756	-9.4777	.9795		
8	B.A.C. 5695	6	-14	-85	22 47.3	- 8 50 26	-0.6522	.5429	-.0655	-9.4556	.9815		
9	B.A.C. 5771	6 $\frac{1}{2}$	+16	-40	4 42.1	- 3 6 47	-0.0840	.5437	-.0569	-9.4756	.9796		
9	B.A.C. 5839	6 $\frac{1}{2}$	+10	-45	10 20.4	+ 2 20 47	-0.1803	.5440	-.0488	-9.4808	.9791		
10	B.A.C. 6060	6 $\frac{1}{2}$	+48	- 7	3 42.9	- 4 49 50	+0.4895	.5460	-.0220	-9.5076	.9763		
10	B.A.C. 6267	6	-21	-87	19 9.8	+10 7 36	-0.6613	.5470	+0.0019	-9.4870	.9785		
10	B.A.C. 6267	6	+38	-13	20 13.1	+11 8 52	+0.3745	.5470	+0.0036	-9.5083	.9762		
10	B.A.C. 6292	6	+54	- 1	20 46.0	+11 40 39	+0.5773	.5470	+0.0046	-9.5123	.9757		
10	B.A.C. 6293	6 $\frac{1}{2}$	+ 8	-42	23 49.0	+11 43 36	-0.1316	.5470	+0.0046	-9.4980	.9773		
10	B.A.C. 6294	6	+17	-31	20 49.7	+11 44 18	+0.0243	.5470	+0.0047	-9.5012	.9770		
11	α^1 Sagittarii	4	+28	-26	21 0.6	+11 8 49	+0.1534	.5476	+0.0423	-9.4921	.9780		
11	α^2 Sagittarii	5 $\frac{1}{2}$	+63	+ 3	21 4.4	+11 12 31	+0.6619	.5477	+0.0424	-9.5025	.9768		
12	B.A.C. 6668	6 $\frac{1}{2}$	+72	+17	0 5.0	- 9 52 39	+0.8776	.5478	+0.0470	-9.5042	.9766		
12	α^1 Sagittarii	6	-42	-90	6 13.2	- 3 56 12	-1.0503	.5474	+0.0562	-9.4557	.9815		
12	α^2 Sagittarii	5	-54	-90	7 5.5	- 3 5 34	-1.1806	.5474	+0.0576	-9.4514	.9819		
13	B.A.C. 6992	6 $\frac{1}{2}$	-56	-90	1 37.1	- 9 9 20	-1.2134	.5465	+0.0847	-9.4185	.9845		
13	β Capricor.	3	-55	-90	1 43.9	- 9 2 45	-1.2073	.5463	+0.0848	-9.4184	.9846		
13	B.A.C. 7063	6	- 3	-68	6 7.7	- 4 47 16	-0.4915	.5461	+0.0908	-9.4266	.9839		
13	τ^1 Capricor.	6	+23	-37	9 39.3	- 1 22 23	-0.0436	.5459	+0.0958	-9.4216	.9837		
13	τ^2 Capricor.	5	+16	-44	10 35.8	- 0 27 43	-0.1574	.5458	+0.0971	-9.4245	.9841		
13	B.A.C. 7145	6 $\frac{1}{2}$	+74	+45	11 11.6	+ 0 7 0	+1.1940	.5458	+0.0977	-9.4556	.9815		
13	8 Aquarii	6 $\frac{1}{2}$	-45	-90	20 41.5	+ 9 18 56	-1.1466	.5449	+0.1102	-9.3700	.9677		
13	9 Aquarii	6	- 4	-73	21 16.7	+ 9 52 59	-0.5631	.5448	+0.1106	-9.3849	.9668		
14	18 Aquarii	6	+35	-27	8 33.8	- 3 11 12	+0.1173	.5436	+0.1245	-9.3663	.9880		
14	λ Capricor.	5 $\frac{1}{2}$	+27	-37	19 33.9	+ 7 28 21	-0.0489	.5428	+0.1366	-9.3169	.9905		
14	B.A.C. 7620	6	- 9	-90	23 3.9	+10 51 42	-0.7000	.5424	+0.1400	-9.2777	.9921		
15	ϵ^1 Aquarii	6	+79	+31	7 24.1	- 5 3 38	+1.0862	.5418	+0.1481	-9.2985	.9912		
15	B.A.C. 7774	6	+11	-57	10 34.1	- 1 59 34	-0.3637	.5415	+0.1509	-9.2264	.9937		
15	67 Aquarii	6	+ 3	-70	23 37.4	+10 39 32	-0.6351	.5408	+0.1614	-9.1243	.9961		
16	λ Aquarii	4	+82	+17	4 15.8	- 8 50 42	+0.8997	.5406	+0.1645	-9.1584	.9954		
16	78 Aquarii	6	+78	+ 2	5 14.3	- 7 54 1	+0.6540	.5406	+0.1652	-9.1383	.9958		
16	81 Aquarii	6	+82	+29	8 37.3	- 4 37 21	+1.0683	.5406	+0.1674	-9.1308	.9960		
16	82 Aquarii	6	+77	+ 1	9 11.5	- 4 4 10	+0.6306	.5405	+0.1676	-9.1028	.9965		
16	ϕ Aquarii	4 $\frac{1}{2}$	+84	+29	15 1.6	+ 1 35 7	+1.0659	.5405	+0.1709	-9.0708	.9970		
16	96 Aquarii	5 $\frac{1}{2}$	+67	- 6	17 32.0	- 5 59 11	+0.5124	.5405	+0.1723	-9.0079	.9977		
16	B.A.C. 8134	6 $\frac{1}{2}$	+44	-24	18 31.3	+ 4 58 20	+0.1990	.5404	+0.1727	-8.9731	.9981		
17	20 Piscium	6	+64	- 9	7 39.2	- 6 18 16	+0.4612	.5411	+0.1779	-8.7851	.9992		
17	B.A.C. 8365	6 $\frac{1}{2}$	+11	-62	16 5.1	+ 1 51 54	-0.4302	.5420	+0.1800	-8.3341	.9999		
18	44 Piscium	6	-44	-89	2 2.7	+11 30 45	-1.2257	.5432	+0.1812	-8.3230	.9999		
18	10 Ceti	6	+83	+ 2	2 38.3	-11 54 46	+0.6659	.5436	+0.1812	-8.1349	.9999		

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Aug. 18	77 Pisc. pr.	7	-14	-86	21 35.1	+ 6 26 5	-0.8521	0.5476	+0.1794	+8.8651	9.9988
19	B.A.C. 408	6½	+90	+ 8	5 39.3	- 9 45 22	+0.7516	.5500	+0.1769	+8.8485	.9989
19	μ Piscium	4½	+28	-40	9 9.4	- 6 22 5	-0.1150	.5511	+0.1756	+8.9784	.9980
19	B.A.C. 481	6½	-43	-83	11 55.9	- 3 41 0	-1.2084	.5521	+0.1743	+9.0839	.9968
20	64 Ceti	6½	+72	- 1	4 21.8	-11 47 37	+0.5508	.5581	+0.1646	+9.1408	.9958
20	ε Ceti	4½	+59	-10	5 6.4	-11 4 28	+0.3057	.5586	+0.1641	+9.1555	.9955
20	B.A.C. 728	6½	-20	-86	9 45.7	- 6 34 33	-0.9341	.5607	+0.1604	+9.2495	.9930
20	B.A.C. 741	6½	+54	-14	10 21.1	- 6 0 20	+0.3218	.5608	+0.1600	+9.1937	.9945
20	ε Arietis	5½	+ 2	-70	10 29.1	- 5 52 41	-0.5865	.5612	+0.1598	+9.2400	.9933
20	B.A.C. 755	6	+12	-56	11 22.0	- 5 1 29	-0.4008	.5616	+0.1590	+9.2382	.9934
20	B.A.C. 830	6	+67	- 4	18 28.3	+ 1 50 13	+0.4915	.5648	+0.1526	+9.2471	.9931
20	38 Arietis	5	-34	-78	19 32.8	+ 2 52 30	-1.1151	.5652	+0.1516	+9.3138	.9906
20	μ Ceti	4	+90	+62	19 33.8	+ 2 53 31	+1.2090	.5652	+0.1515	+9.2200	.9930
21	B.A.C. 987	6½	+30	-34	7 15.3	- 9 49 24	-0.0859	.5708	+0.1392	+9.3368	.9895
21	f Tauri	4	+90	+41	15 45.0	- 1 37 44	+1.1157	.5754	+0.1285	+9.3345	.9896
22	Wei. III. 1065	8½	+74	+ 6	5 56.2	-11 57 27	+0.5660	.5838	+0.1069	+9.4033	.9856
22	Weis. IV. 24	9	+80	+ 9	8 39.0	- 9 20 36	+0.6216	.5842	+0.1040	+9.4098	.9852
22	Lal. 7753	7½	+29	-30	8 43.9	- 9 15 57	-0.0938	.5842	+0.1039	+9.4256	.9837
22	B.A.C. 1281	7	-12	-74	8 46.6	- 9 13 21	-0.8030	.5843	+0.1038	+9.4462	.9822
22	Rumk. 1103	7	+49	-12	8 50.0	- 9 10 1	+0.2421	.5843	+0.1037	+9.4208	.9844
22	Rumk. 1108	9	+90	+33	9 17.3	- 8 43 44	+0.9901	.5844	+0.1032	+9.4012	.9858
22	Rumk. 1123	8½	+90	+43	10 5.8	- 7 57 4	+1.1089	.5849	+0.1018	+9.4002	.9858
22	48 Tauri	6	+85	+12	10 46.0	- 7 18 21	+0.6566	.5854	+0.1007	+9.4148	.9848
22	Rumk. 1136	6	+27	-32	11 11.5	- 6 53 47	-0.1325	.5854	+0.1001	+9.4372	.9831
22	γ Tauri	4	+76	+ 7	12 26.3	- 5 41 46	+0.5797	.5863	+0.0977	+9.4215	.9843
22	55 Tauri	7	+16	-44	12 28.2	- 5 39 54	-0.3286	.5864	+0.0979	+9.4456	.9824
22	58 Tauri	6	+90	+48	12 47.3	- 5 21 33	+1.1535	.5865	+0.0974	+9.4065	.9854
22	Rumk. 1163	8	+ 3	-60	13 8.8	- 5 0 51	-0.5553	.5866	+0.0970	+9.4530	.9818
22	Wei. IV. 286	8	+90	+65	13 40.5	- 4 30 20	+1.2715	.5869	+0.0950	+9.4056	.9855
22	δ Tauri	4	-55	-73	13 42.3	- 4 28 34	-1.2534	.5869	+0.0958	+9.4715	.9801
22	63 Tauri	6	+ 9	-52	13 55.4	- 4 16 1	-0.4576	.5870	+0.0957	+9.4525	.9818
22	B.A.C. 1351	6½	+17	-42	13 56.8	- 4 14 37	-0.3046	.5870	+0.0954	+9.4486	.9821
22	δ Tauri	6	-36	-73	14 11.4	- 4 0 36	-1.1112	.5872	+0.0953	+9.4692	.9803
22	Lal. 8249	7½	+ 7	-73	14 18.4	- 3 53 49	-0.7308	.5872	+0.0950	+9.4602	.9811
22	Lal. 8256	8	+ 5	-58	14 21.0	- 3 51 22	-0.5294	.5873	+0.0948	+9.4552	.9816
22	70 Tauri	7	+66	+ 2	14 51.3	- 3 22 8	+0.4758	.5875	+0.0940	+9.4305	.9836
22	Lal. 8311	8	+90	+29	15 3.4	- 3 10 34	+0.9143	.5877	+0.0936	+9.4192	.9845
22	Rumk. 1188	6½	+90	+29	15 3.5	- 3 10 23	+0.9158	.5877	+0.0936	+9.4191	.9845
22	Rumk. 1189	6	+10	-50	15 9.6	- 3 4 35	-0.4275	.5876	+0.0935	+9.4546	.9816
22	71 Tauri	6	+90	+23	15 9.7	- 3 4 28	+0.8300	.5876	+0.0935	+9.4217	.9843
22	Rumk. 1192	6	- 7	-73	15 12.4	- 3 1 50	-0.7273	.5877	+0.0934	+9.4622	.9809
22	Rumk. 1198	6	+90	+32	15 28.4	- 2 46 28	+0.9552	.5878	+0.0930	+9.4191	.9845
22	Rumk. 1200	6	+90	+28	15 40.7	- 2 34 35	+0.9034	.5879	+0.0926	+9.4210	.9844
22	Rumk. 1203	6	+47	-13	15 58.7	- 2 17 17	+0.2062	.5880	+0.0921	+9.4403	.9828
22	75 Tauri	6	+44	-16	16 1.2	- 2 14 50	+0.1515	.5880	+0.0920	+9.4419	.9827
22	δ Tauri	4½	+74	+ 7	16 4.6	- 2 11 35	+0.5581	.5880	+0.0920	+9.4314	.9836
22	δ Tauri	4½	+85	+12	16 7.0	- 2 9 17	+0.6545	.5880	+0.0919	+9.4289	.9838
22	Rumk. 1210	6	+58	- 4	16 14.7	- 2 1 56	+0.3717	.5881	+0.0917	+9.4366	.9832
22	Rumk. 1212	6	-28	-73	16 21.6	- 1 55 13	-1.0261	.5882	+0.0915	+9.4721	.9800
22	80 Tauri	6	+90	+31	16 44.1	- 1 33 39	+0.9428	.5883	+0.0908	+9.4225	.9843
22	B.A.C. 1391	5	+60	- 2	16 53.6	- 1 24 25	+0.3913	.5884	+0.0906	+9.4377	.9831
22	81 Tauri	5½	+90	+17	16 56.6	- 1 21 35	+0.7363	.5884	+0.0905	+9.4242	.9841
22	B.A.C. 1394	7	+63	0	16 59.2	- 1 19 1	+0.4308	.5884	+0.0904	+9.4366	.9832
22	Rumk. 1227	7	+90	+22	17 14.1	- 1 4 45	+0.8037	.5886	+0.0900	+9.4276	.9839
22	85 Tauri	6	+90	+20	17 26.4	- 0 52 55	+0.7843	0.5887	+0.0896	+9.4285	9.9838

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ .	At Washington Mean Time of Conjunction.							
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D		
					h m	h m s							
Aug. 22	Rumk. 1232		+37	-21	17 38.3	- 0 41 28	+0.0417	0.5888	+0.0892	+9.4484	9.9822		
22	Rumk. 123		-51	-73	17 44.2	- 0 35 47	-1.2317	.5889	+0.0890	+9.4799	.9793		
22	Rumk. 1235		+86	+13	17 50.1	- 0 30 3	+0.6598	.5889	+0.0888	+9.4320	.9835		
22	B.A.C. 1406	7	+58	- 4	18 10.0	- 0 10 53	+0.3643	.5891	+0.0884	+9.4414	.9828		
22	Rumk. 1238	10	+47	-12	18 30.3	+ 0 8 36	+0.2024	.5894	+0.0877	+9.4463	.9824		
22	Lal. 8599	9	-31	-73	18 34.2	+ 0 12 23	-1.0517	.5894	+0.0876	+9.4774	.9795		
22	Wei. IV. 549	8½	+90	+58	18 34.5	+ 0 12 40	+1.2233	.5894	+0.0876	+9.4193	.9845		
22	Lal. 8610	8	+19	-38	18 42.3	+ 0 20 9	-0.2787	.5895	+0.0873	+9.4589	.9812		
22	Lal. 8613	8	+ 7	-54	18 43.5	+ 0 21 21	-0.4821	.5895	+0.0873	+9.4640	.9808		
22	α Tauri	1	+49	-10	19 6.1	+ 0 43 6	+0.2445	.5895	+0.0868	+9.4466	.9823		
22	89 Tauri	7	+90	+22	20 2.0	+ 1 36 51	+0.8065	.5899	+0.0852	+9.4340	.9834		
22	α' Tauri	5½	+90	+42	20 27.0	+ 2 0 56	+1.0745	.5900	+0.0845	+9.4278	.9838		
22	α'' Tauri	5½	+90	+33	20 29.7	+ 2 3 30	+0.9536	.5900	+0.0844	+9.4310	.9836		
22	Rumk. 1241		+58	- 3	20 44.3	+ 2 17 35	+0.3656	.5901	+0.0840	+9.4470	.9823		
22	Rumk. 1243	8	+59	- 2	20 57.1	+ 2 29 50	+0.3892	.5902	+0.0836	+9.4469	.9823		
22	Rumk. 1246	7	+ 7	-53	21 23.9	+ 2 55 38	-0.4869	.5905	+0.0827	+9.4696	.9802		
22	Rumk. 1247		+48	-10	21 24.2	+ 2 55 57	+0.2289	.5905	+0.0827	+9.4519	.9819		
22	Rumk. 1254		+51	- 8	21 39.8	+ 3 11 0	+0.2734	.5906	+0.0822	+9.4514	.9819		
22	Rumk. 1255		+90	+36	21 41.0	+ 3 12 7	+0.9956	.5906	+0.0822	+9.4326	.9835		
22	Lal. 8852	9½	+15	-43	21 59.1	+ 3 29 34	-0.3421	.5907	+0.0817	+9.4674	.9805		
22	Rumk. 1263	9½	+90	+34	22 36.6	+ 4 5 34	+0.9745	.5910	+0.0806	+9.4352	.9833		
22	Rumk. 1263	8½	+90	+49	23 11.7	+ 4 39 24	+1.1466	.5912	+0.0799	+9.4319	.9835		
23	Rumk. 1263	7	+69	+ 5	0 19.9	+ 5 44 57	+0.5110	.5920	+0.0777	+9.4508	.9820		
23	Rumk. 1264		+90	+37	1 12.5	+ 6 35 32	+1.0039	.5924	+0.0760	+9.4397	.9829		
23	Rumk. 1299	7½	+ 8	-51	1 36.5	+ 6 58 38	-0.4674	.5924	+0.0750	+9.4771	.9795		
23	Rumk. 1300		+11	-47	1 38.8	+ 7 0 52	-0.4111	.5926	+0.0750	+9.4759	.9797		
23	B.A.C. 1526	6	+48	- 9	3 52.2	+ 9 9 12	+0.2267	.5937	+0.0710	+9.4645	.9808		
23	m Tauri	5½	-30	-72	7 53.3	-10 58 59	-1.0426	.5952	+0.0635	+9.5005	.9771		
23	111 Tauri	6	+75	+11	14 45.7	- 4 22 29	+0.5651	.5983	+0.0501	+9.4723	.9800		
23	115 Tauri	5½	+36	-18	15 51.7	- 3 19 3	+0.0275	.5986	+0.0480	+9.4863	.9766		
23	117 Tauri	6	+90	+24	16 13.3	- 2 58 17	+0.7688	.5987	+0.0473	+9.4690	.9803		
23	119 Tauri	5½	+ 4	-53	17 51.9	- 1 23 33	-0.5319	.5994	+0.0440	+9.5013	.9770		
23	B.A.C. 1728	6½	+90	+41	17 54.6	- 1 20 56	+1.0172	.5994	+0.0439	+9.4648	.9807		
23	120 Tauri	6	+ 8	-48	18 23.4	- 0 53 14	-0.4591	.5996	+0.0427	+9.5001	.9771		
23	122 Tauri	6	+90	+48	19 49.9	+ 0 29 53	+1.0967	.6001	+0.0400	+9.4648	.9807		
23	130 Tauri	6	+70	+10	23 56.5	+ 4 26 48	+0.5189	.6014	+0.0317	+9.4823	.9790		
24	B.A.C. 1930	6½	+90	+21	6 4.9	+10 20 44	+0.6864	.6031	+0.0190	+9.4819	.9791		
24	71 Orionis	5½	-11	-71	10 44.4	- 9 10 50	-0.7861	.6056	+0.0090	+9.5169	.9752		
24	26 Geminor.	5½	+81	+18	21 34.7	+ 1 13 37	+0.6146	.6062	-0.0141	+9.4846	.9788		
25	1 Geminor.	3½	+90	+59	11 34.1	- 9 20 32	+1.2025	.6065	-0.0438	+9.4603	.9811		
25	B.A.C. 2432	6½	- 1	-62	13 29.1	- 7 30 6	-0.6281	.6065	-0.0478	+9.5020	.9769		
25	f Geminor.	6	+10	-47	19 55.3	- 1 19 18	-0.4279	.6060	-0.0609	+9.4893	.9783		
26	1 Cancri	6	+90	+32	2 50.9	+ 5 19 53	+0.9262	.6051	-0.0748	+9.4440	.9826		
26	3 Cancri	6	- 6	-72	4 18.9	+ 6 44 23	-0.7073	.6049	-0.0775	+9.4821	.9790		
26	5 Cancri	6	+41	-16	4 36.8	+ 7 1 35	+0.1170	.6048	-0.0784	+9.4614	.9810		
26	B.A.C. 2731	6½	- 8	-73	7 58.0	+10 14 47	-0.7389	.6040	-0.0848	+9.4758	.9797		
27	54 Cancri	6½	-13	-74	0 21.8	+ 2 0 6	-0.8215	.5991	-0.1146	+9.4361	.9832		
27	α' Cancri	6	-34	-74	2 51.8	+ 4 24 17	-1.1020	.5984	-0.1185	+9.4358	.9832		
30	β Virginis	3½	+55	-15	5 0.0	+ 3 50 44	+0.3415	.5651	-0.1858	+8.6418	.9996		
30	B.A.C. 4043	6½	+90	+17	8 50.6	+ 7 33 29	+0.9001	.5635	-0.1863	+8.3456	9.9999		
30	13 Virginis	6	+75	- 2	17 48.5	- 7 46 44	+0.5865	.5600	-0.1864	-6.9289	0.0000		
30	γ Virginis	3½	+56	-16	18 22.9	- 7 13 28	+0.3558	.5596	-0.1863	+7.0972	.0000		
31	γ Virginis pr.	2½	- 5	-89	4 20.1	+ 2 32 34	-0.7023	.5563	-0.1847	-8.0998	0.0000		
31	B.A.C. 4277	6	- 7	-90	5 21.5	+ 3 23 12	-0.7372	.5569	-0.1845	-8.1676	9.9999		
31	38 Virginis	6	+67	- 7	9 50.2	+ 7 43 4	+0.5030	0.5545	-0.1831	-8.6936	9.9995		

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Aug. 31	λ Virginis	6	+47	-23	12 51.2	+10 38 8	+0.2263	0.5535	-1.1820	-8.7321	9.9994
31	46 Virginis	6½	+17	-53	13 17.8	+11 3 50	-0.3136	.5537	-1.1820	-8.6653	.9995
31	48 Virginis	6	+18	-52	14 50.9	-11 26 3	-0.2889	.5532	-1.1813	-8.7110	.9994
31	δ Virginis tr.	4½	+85	+33	17 40.9	-8 41 41	+1.1647	.5525	-1.1801	-8.1252	.9984
Sept. 1	65 Virginis	6	+1	-75	0 0.1	-2 34 47	-0.5920	.5508	-1.1787	-8.8676	.9988
1	66 Virginis	6	+10	-62	0 34.5	-2 1 31	-0.4416	.5566	-1.1766	-8.8915	.9987
1	ϵ Virginis	5	+39	-29	4 6.1	+1 23 16	+0.0949	.5497	-1.1746	-8.9869	.9979
1	80 Virginis	6	-32	-90	5 47.5	+3 1 24	-1.0937	.5494	-1.1735	-8.9152	.9985
1	94 Virginis	6	+42	-25	20 27.6	-6 46 42	+0.1689	.5468	-1.1629	-9.1571	.9985
1	95 Virginis	6	+71	-2	20 39.9	-6 34 47	+0.5829	.5468	-1.1628	-9.1766	.9950
1	α Virginis	4½	+81	+37	23 36.6	-3 43 58	+1.1468	.5464	-1.1604	-9.2245	.9938
2	ξ Libræ	6	+27	-37	19 34.7	-8 23 44	-0.0501	.5444	-1.1413	-9.2422	.9914
2	ϵ Libræ	6	-11	-90	20 44.2	-7 16 27	-0.7330	.5444	-1.1412	-9.2755	.9921
2	18 Libræ pr.	6½	-43	-90	21 46.8	-6 15 53	-1.1601	.5443	-1.1391	-9.2650	.9925
3	γ Libræ	4½	+67	-1	15 24.9	+10 48 44	+0.5961	.5436	-1.1186	-9.3940	.9862
3	η Libræ	6	+75	+34	19 32.4	-9 11 35	+1.0905	.5436	-1.1135	-9.4199	.9844
4	48 Libræ	4½	-44	-90	2 24.0	-2 33 1	-1.1246	.5436	-1.1047	-9.3804	.9871
4	49 Libræ	5½	+74	+48	3 25.6	-1 33 22	+1.2184	.5436	-1.1034	-9.4440	.9825
4	ϕ Ophiuchi	5	+25	-33	18 16.9	-11 10 16	+0.0298	.5439	-1.0834	-9.4477	.9821
4	24 Scorpii	5	+73	+19	23 17.4	-6 19 18	+0.9064	.5441	-1.0764	-9.4777	.9795
5	B.A.C. 5695	6	-10	-75	6 17.2	+0 27 11	-0.5715	.5444	-1.0663	-9.4566	.9815
5	B.A.C. 5771	6½	+21	-35	12 9.8	+6 8 36	-0.0074	.5447	-1.0661	-9.4765	.9796
5	B.A.C. 5839	6½	+14	-41	17 46.3	+11 34 26	-0.1057	.5447	-1.0489	-9.4808	.9791
6	B.A.C. 6060	6½	+54	-3	11 5.8	+4 29 46	+0.5655	.5453	-1.0226	-9.5676	.9763
7	B.A.C. 6267	6	-18	-79	2 32.5	-4 42 4	-0.5987	.5458	+0.0017	-9.4870	.9765
7	B.A.C. 6287	6	+43	-10	3 35.8	-3 40 47	+0.4342	.5458	+0.0033	-9.5083	.9762
7	B.A.C. 6292	6	+60	+2	4 8.7	-3 8 58	+0.6365	.5458	+0.0040	-9.5123	.9757
7	B.A.C. 6293	6½	+12	-39	4 11.7	-3 6 3	-0.0709	.5458	+0.0040	-9.4980	.9773
7	B.A.C. 6294	6	+20	-30	4 12.4	-3 5 21	+0.0846	.5458	+0.0041	-9.5012	.9770
8	ϵ Sagittarii	4	+31	-23	4 25.6	-3 38 31	+0.2028	.5460	+0.0419	-9.4921	.9780
8	ϵ Sagittarii	5½	+71	+7	4 29.5	-3 34 45	+0.7110	.5460	+0.0420	-9.5025	.9768
8	B.A.C. 6658	6	+72	+21	7 30.4	-0 39 33	+0.9247	.5459	+0.0466	-9.5042	.9766
8	ϵ Sagittarii	6	-38	-90	13 39.3	+5 17 36	-1.0035	.5456	+0.0558	-9.4556	.9815
8	α Sagittarii	5	-50	-90	14 31.7	+6 8 19	-1.1337	.5456	+0.0572	-9.4515	.9819
9	B.A.C. 6992	6½	-51	-90	9 5.0	+0 6 13	-1.1749	.5454	+0.0839	-9.4185	.9845
9	β Capricor.	3	-50	-90	9 11.8	+0 12 49	-1.1690	.5454	+0.0840	-9.4184	.9845
9	B.A.C. 7063	6	-1	-65	13 35.8	+4 28 27	-0.4563	.5451	+0.0904	-9.4267	.9839
9	τ Capricor.	6	+24	-35	17 7.4	+7 53 21	-0.0107	.5449	+0.0950	-9.4286	.9837
9	τ Capricor.	5	+18	-42	18 3.8	+8 48 1	-0.1246	.5449	+0.0962	-9.4245	.9841
9	B.A.C. 7145	6½	+74	+49	18 39.7	+9 22 45	+1.2235	.5449	+0.0972	-9.4556	.9815
10	8 Aquarii	6	-42	-90	4 9.1	-5 25 49	-1.1158	.5445	+0.1094	-9.3700	.9877
10	9 Aquarii	6	-2	-70	4 44.2	-4 51 49	-0.5240	.5444	+0.1103	-9.3849	.9868
10	18 Aquarii	6	+36	-27	15 59.6	+6 2 19	+0.1396	.5439	+0.1240	-9.3663	.9879
11	λ Capricor.	5½	+28	-36	2 56.9	-7 21 2	-0.0306	.5436	+0.1363	-9.3169	.9904
11	B.A.C. 7620	6	-8	-87	6 25.7	-3 58 51	-0.6806	.5436	+0.1401	-9.2778	.9920
11	ϵ Aquarii	6	+79	+32	14 42.5	+4 2 26	+1.0952	.5435	+0.1482	-9.2984	.9912
11	B.A.C. 7774	6	+12	-56	17 51.0	+7 5 0	-0.3499	.5435	+0.1511	-9.2964	.9937
12	67 Aquarii	6	+4	-69	6 47.0	-4 23 20	-0.5246	.5436	+0.1619	-9.1943	.9961
12	λ Aquarii	4	+82	+17	11 22.4	+0 3 28	+0.9012	.5437	+0.1653	-9.1584	.9954
12	78 Aquarii	6	+80	+3	12 20.2	+0 59 29	+0.6913	.5439	+0.1656	-9.1300	.9968
12	81 Aquarii	6	+82	+30	15 40.8	+4 13 46	+1.0799	.5441	+0.1681	-9.1315	.9960
12	82 Aquarii	6	+79	+2	16 14.6	+4 46 32	+0.6536	.5441	+0.1684	-9.1036	.9965
12	ϕ Aquarii	4½	+84	+20	22 0.3	+10 21 23	+1.0622	.5444	+0.1719	-9.0708	.9970
13	96 Aquarii	5½	+67	-6	0 28.7	-11 14 55	+0.5116	.5446	+0.1734	-9.0778	.9977
13	B.A.C. 8134	6½	+45	-23	1 27.2	-10 18 13	+0.1998	0.5446	+0.1738	-8.9731	9.9981

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Sept. 13	20 Piscium	6	+64	-9	14 23.7	+ 2 13 45	+0.4648	0.5460	+1.793	-8.7850	9.9992
13	B.A.C. 8365	6½	+11	-62	22 41.7	+10 16 2	-0.4305	.5470	+1.815	-8.3339	9.9999
14	10 Ceti	6	+90	+23	9 4.5	- 3 41 2	+0.9806	.5489	+1.829	-8.1344	0.0000
15	77 Pisc. pr.	7	-14	-86	3 42.5	- 9 39 7	-0.8543	.5531	+1.810	+8.6552	9.9988
15	B.A.C. 408	6½	+90	+ 8	11 38.9	- 1 58 21	+0.7485	.5556	+1.786	+8.8476	.9989
15	μ Piscium	4½	+23	-41	15 5.7	+ 1 21 41	-0.1227	.5564	+1.772	+8.9784	.9980
15	B.A.C. 481	6½	-43	-83	17 49.7	+ 4 0 14	-1.2100	.5574	+1.759	+9.0839	.9968
16	64 Ceti	6½	+71	- 2	10 2.0	- 4 20 0	+0.5488	.5629	+1.669	+9.1408	.9958
16	z ¹ Ceti	4½	+58	-11	10 46.2	- 3 37 21	+0.3856	.5632	+1.654	+9.1555	.9955
16	B.A.C. 728	6½	-20	-80	15 22.2	+ 0 49 17	-0.9391	.5649	+1.615	+9.2495	.9930
16	B.A.C. 741	6½	+53	-14	15 57.2	+ 1 23 6	+0.3121	.5651	+1.612	+9.1997	.9945
16	ϵ Arietis	5½	+ 2	-71	16 5.1	+ 1 30 41	-0.5928	.5651	+1.611	+9.2401	.9933
16	B.A.C. 755	6	+12	-57	16 57.5	+ 2 21 19	-0.4078	.5653	+1.603	+9.2382	.9934
16	B.A.C. 830	6	+66	- 4	23 59.5	+ 9 8 49	+0.4818	.5683	+1.536	+9.2471	.9931
17	38 Arietis	5	-35	-78	1 3.5	+10 10 32	-1.1207	.5686	+1.527	+9.3138	.9906
17	μ Ceti	4	+90	+69	1 4.5	+10 11 33	+1.2880	.5687	+1.527	+9.2200	.9939
17	B.A.C. 987	6½	+29	-34	12 41.1	- 2 36 15	-0.0931	.5736	+1.397	+9.3368	.9895
17	γ Tauri	4	+90	+40	21 9.0	+ 5 33 34	+1.1097	.5769	+1.291	+9.3346	.9896
18	Wei. III. 1085	8½	+74	+ 5	11 23.4	- 4 45 53	+0.5623	.5825	+1.085	+9.4033	.9856
18	Weis. IV. 24	9	+80	+ 9	14 3.8	- 2 8 31	+0.6187	.5837	+1.042	+9.4098	.9852
18	Lal. 7753	7½	+29	-31	14 8.7	- 2 3 49	-0.0987	.5838	+1.041	+9.4206	.9837
18	B.A.C. 1281	7	-12	-74	14 11.4	- 2 1 13	-0.8102	.5838	+1.040	+9.4482	.9822
18	Rumk. 1103	7	+49	-12	14 15.4	- 1 57 23	+0.2382	.5838	+1.039	+9.4208	.9844
18	Rumk. 1108	9	+90	+33	14 42.3	- 1 31 29	+0.9885	.5839	+1.030	+9.4012	.9858
18	Rumk. 1123	8½	+90	+43	15 30.9	- 0 44 35	+1.1076	.5843	+1.016	+9.4002	.9858
18	48 Tauri	6	+85	+11	16 11.3	- 0 5 42	+0.6545	.5845	+1.007	+9.4148	.9848
18	Rumk. 1136	6	+27	-33	16 36.9	+ 0 19 0	-0.1371	.5847	+1.000	+9.4372	.9831
18	γ Tauri	4	+76	+ 7	17 52.1	+ 1 31 25	+0.5777	.5852	+0.979	+9.4215	.9843
18	55 Tauri	7	+26	-44	17 54.1	+ 1 33 18	-0.3338	.5852	+0.978	+9.4456	.9824
18	58 Tauri	6	+90	+48	18 13.2	+ 1 51 43	+1.1535	.5853	+0.973	+9.4065	.9854
18	Rumk. 1163	8	+ 3	-61	18 34.9	+ 2 12 34	-0.5610	.5855	+0.967	+9.4530	.9818
18	Wei. IV. 286	8	+90	+65	19 6.7	+ 2 43 12	+1.2717	.5857	+0.958	+9.4056	.9855
18	δ Tauri	4	-57	-73	19 8.6	+ 2 45 0	-1.2621	.5857	+0.957	+9.4715	.9801
18	63 Tauri	6	+ 8	-53	19 21.7	+ 2 57 38	-0.4631	.5857	+0.953	+9.4524	.9818
18	B.A.C. 1351	6½	+17	-43	19 23.2	+ 2 59 3	-0.3095	.5858	+0.953	+9.4486	.9821
18	δ Tauri	6	-37	-73	19 37.8	+ 3 13 8	-1.1189	.5859	+0.949	+9.4692	.9803
18	Lal. 8249	7½	-28	-71	19 44.9	+ 3 19 59	-0.7371	.5859	+0.947	+9.4602	.9811
18	Lal. 8256	8	+ 4	-58	19 47.5	+ 3 22 26	-0.5351	.5857	+0.946	+9.4553	.9816
18	γ Tauri	7	+66	+ 2	20 18.0	+ 3 51 51	+0.4736	.5859	+0.938	+9.4305	.9836
18	Lal. 8311	8	+90	+29	20 30.1	+ 4 3 29	+0.9143	.5859	+0.935	+9.4192	.9845
18	Rumk. 1188	6½	+90	+29	20 30.3	+ 4 3 41	+0.9156	.5859	+0.935	+9.4192	.9845
18	Rumk. 1189	6	+10	-51	20 36.3	+ 4 9 30	-0.4312	.5860	+0.933	+9.4546	.9816
18	71 Tauri	6	+90	+23	20 36.5	+ 4 9 38	+0.8293	.5860	+0.933	+9.4218	.9843
18	Rumk. 1192	6	-28	-73	20 39.3	+ 4 12 18	-0.7335	.5860	+0.932	+9.4622	.9809
18	Rumk. 1198	6	+90	+32	20 55.3	+ 4 27 46	+0.9550	.5861	+0.928	+9.4191	.9845
18	Rumk. 1230	6	+90	+28	21 7.7	+ 4 39 44	+0.9030	.5862	+0.925	+9.4211	.9843
18	Rumk. 1203	6	+47	-13	21 25.8	+ 4 57 8	+0.2032	.5863	+0.920	+9.4404	.9828
18	75 Tauri	6	+43	-16	21 28.4	+ 4 59 36	+0.1484	.5863	+0.919	+9.4419	.9827
18	δ Tauri	4½	+74	+ 7	21 31.8	+ 5 2 53	+0.5567	.5863	+0.919	+9.4314	.9836
18	6 th Tauri	4½	+85	+12	21 34.2	+ 5 5 10	+0.6534	.5864	+0.918	+9.4289	.9837
18	Rumk. 1210	6	+57	- 4	21 41.9	+ 5 12 38	+0.3697	.5865	+0.915	+9.4367	.9831
18	Rumk. 1212	6	-27	-73	21 48.9	+ 5 19 23	-1.0340	.5867	+0.913	+9.4721	.9800
18	80 Tauri pr.	6	+90	+31	22 11.5	+ 5 41 6	+0.9432	.5868	+0.907	+9.4226	.9842
18	B.A.C. 1391	5	+59	- 2	22 21.1	+ 5 50 22	+0.3893	.5869	+0.904	+9.4377	.9830
18	81 Tauri	5½	+90	+28	22 24.1	+ 5 53 16	+0.9053	0.5869	+0.903	+9.4242	9.9841

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Sept. 18	B.A.C. 1304	7	+63	0	22 26.8	+ 5 55 51	+0.4382	0.5860	+0.0002	+9.4367	9.9831
18	Rumk. 1227	7	+90	+22	22 41.7	+ 6 10 15	+0.8035	.5870	+0.0818	+9.4276	9.9838
18	85 Tauri	6	+90	+21	22 54.1	+ 6 22 8	+0.7841	.5871	+0.0805	+9.4286	9.9838
18	Rumk. 1232		+37	-22	23 6.1	+ 6 33 43	+0.0382	.5871	+0.0893	+9.4485	9.9822
18	Rumk. 1243		-53	-73	23 12.0	+ 6 30 24	-1.2408	.5872	+0.0890	+9.4739	9.9792
18	Rumk. 1235		+86	+13	23 18.0	+ 6 45 9	+0.6500	.5872	+0.0889	+9.4320	9.9834
18	B.A.C. 1416	7	+55	-4	23 38.1	+ 7 4 30	+0.3623	.5872	+0.0882	+9.4414	9.9827
18	Rumk. 1238	10	+47	-13	23 58.5	+ 7 24 7	+0.1998	.5873	+0.0876	+9.4463	9.9823
19	Lal. 8599	9	-31	-73	0 2.5	+ 7 27 57	-1.0692	.5873	+0.0875	+9.4774	9.9795
19	Wei. IV. 549	8½	+90	+59	0 2.7	+ 7 28 14	+1.2306	.5873	+0.0875	+9.4193	9.9845
19	Lal. 8610	8	+19	-40	0 10.6	+ 7 35 46	-0.2835	.5873	+0.0873	+9.4589	9.9812
19	Lal. 8613	8	+7	-54	0 11.9	+ 7 37 1	-0.4879	.5873	+0.0872	+9.4640	9.9808
19	α Tauri	1	+43	-10	0 34.6	+ 7 54 54	+0.2424	.5875	+0.0866	+9.4466	9.9823
19	89 Tauri	7	+90	+22	1 30.9	+ 8 53 8	+0.8067	.5878	+0.0849	+9.4340	9.9833
19	α¹ Tauri	5½	+90	+42	1 56.2	+ 9 17 27	+1.0762	.5880	+0.0842	+9.4278	9.9838
19	α² Tauri	5½	+90	+33	1 58.9	+ 9 20 1	+0.9609	.5880	+0.0841	+9.4310	9.9836
19	Rumk. 1241		+58	-3	2 13.6	+ 9 34 14	+0.3641	.5881	+0.0837	+9.4471	9.9823
19	Rumk. 1243	8	+59	-2	2 26.5	+ 9 46 35	+0.3878	.5882	+0.0833	+9.4469	9.9823
19	Rumk. 1246	7	+7	-54	2 53.5	+10 12 37	-0.4921	.5883	+0.0825	+9.4697	9.9802
19	Rumk. 1247		+48	-11	2 53.9	+10 12 57	+0.2270	.5884	+0.0825	+9.4520	9.9819
19	Rumk. 1254		+51	-8	3 9.6	+10 28 8	+0.2716	.5884	+0.0822	+9.4514	9.9819
19	Rumk. 1255		+90	+36	3 10.8	+10 29 16	+0.9975	.5885	+0.0821	+9.4327	9.9834
19	Lal. 8852	9½	+15	-44	3 29.1	+10 46 53	-0.3469	.5886	-0.0813	+9.4673	9.9805
19	Rumk. 1263	9½	+90	+34	4 6.9	+11 23 12	+0.9766	.5887	+0.0804	+9.4352	9.9832
19	Rumk. 1268	8½	+90	+48	4 42.3	+11 57 22	+1.1497	.5890	+0.0792	+9.4319	9.9835
19	Rumk. 1283	7	+69	+6	5 51.2	-10 56 25	+0.5110	.5892	+0.0772	+9.4508	9.9820
19	Rumk. 1294		+90	+37	6 44.3	-10 5 15	+1.0069	.5898	+0.0766	+9.4388	9.9829
19	Rumk. 1299	7½	+8	-52	7 8.5	-9 41 57	-0.4727	.5899	+0.0750	+9.4772	9.9795
19	Rumk. 1300		+11	-48	7 10.9	-9 39 41	-0.4162	.5899	+0.0750	+9.4759	9.9796
19	B.A.C. 1526	6	+48	-10	9 25.7	-7 29 55	+0.2228	.5903	+0.0705	+9.4645	9.9807
19	m Tauri	5½	-31	-72	13 29.7	-3 35 9	-1.0512	.5924	+0.0630	+9.5006	9.9770
19	111 Tauri	6	+75	+11	20 28.0	+ 3 7 10	+0.5686	.5936	+0.0497	+9.4722	9.9800
19	115 Tauri	5½	+36	-18	21 35.0	+ 4 11 38	+0.0272	.5938	+0.0476	+9.4863	9.9786
19	117 Tauri	6	+90	+24	21 56.9	+ 4 32 44	+0.7746	.5940	+0.0470	+9.4680	9.9803
19	119 Tauri	5½	+4	-54	23 37.1	+ 6 9 3	-0.5365	.5943	+0.0436	+9.5013	9.9770
19	B.A.C. 1728	6½	+90	+42	23 39.9	+ 6 11 44	+1.0252	.5943	+0.0435	+9.4648	9.9807
20	120 Tauri	6	+8	-48	0 9.2	+ 6 39 55	-0.4628	.5943	+0.0428	+9.5001	9.9771
20	122 Tauri	6	+90	+49	1 37.1	+ 8 4 28	+1.1056	.5948	+0.0397	+9.4648	9.9807
20	130 Tauri	6	+71	+11	5 48.1	-11 54 10	+0.5240	.5957	+0.0314	+9.4923	9.9790
20	B.A.C. 1930	6½	+90	+22	12 3.8	-5 53 0	+0.6944	.5966	+0.0189	+9.4820	9.9790
20	71 Orionis	5½	-12	-71	16 49.3	-1 18 33	-0.7927	.5973	+0.0091	+9.5169	9.9751
21	26 Geminor.	5½	+82	+18	3 54.9	+ 9 21 16	+0.6243	.5980	-0.0136	+9.4846	9.9788
21	Δ Geminor.	3½	+90	+62	18 16.6	-0 50 27	+1.2118	.5976	-0.0427	+9.4633	9.9811
21	B.A.C. 2432	6½	-2	-63	20 14.9	+ 1 3 14	-0.6318	.5976	-0.0467	+9.5020	9.9769
22	f Geminor.	6	+10	-47	2 52.1	+ 7 25 10	-0.4287	.5965	-0.0599	+9.4893	9.9783
22	1 Cancri	6	+90	+33	10 0.0	-9 43 25	+0.9436	.5964	-0.0736	+9.4440	9.9825
22	3 Cancri	6	-6	-72	11 30.7	-8 16 15	-0.7117	.5953	-0.0766	+9.4821	9.9790
22	5 Cancri	6	+42	-16	11 49.1	-7 58 32	+0.1237	.5951	-0.0771	+9.4614	9.9810
22	B.A.C. 2731	6½	-8	-73	15 16.3	-4 39 19	-0.7437	.5944	-0.0833	+9.4758	9.9796
23	54 Cancri	6½	-13	-74	8 9.4	+11 35 28	-0.8272	.5899	-0.1125	+9.4360	9.9832
23	α¹ Cancri	6	-36	-74	10 43.8	-9 55 57	-1.1115	.5890	-0.1168	+9.4358	9.9832
24	ξ Leonis	6	+90	+31	1 21.0	+ 4 8 42	+1.0079	.5841	-0.1379	+9.3137	9.9806
24	18 Leonis	6	+12	-54	7 28.4	+10 2 40	-0.4030	.5818	-0.1461	+9.3326	9.9807
24	B.A.C. 3345	6	+29	-35	7 58.7	+10 31 48	-0.0937	.5818	-0.1466	+9.3194	9.9804
24	A Leonis	5	+34	-31	16 43.9	-5 1 58	-0.0077	0.5785	-0.1566	+9.2666	9.9823

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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Sept. 24	B. A. C. 3538	6½	+36	-30	22 57.1	+ 0 57 54	+0.0297	0.5762	-.1628	+9.2235	9.9938
25	44 Leonis	6	+34	-32	0 15.9	+ 2 13 55	-0.0066	.5758	-.1640	+9.2156	.9941
25	B. A. C. 3562	6½	+33	-33	0 25.0	+ 2 22 41	-0.0232	.5754	-.1643	+9.2151	.9941
25	45 Leonis	6	-40	-80	1 18.2	+ 3 13 56	-1.1760	.5754	-.1649	+9.2580	.9928
25	ϵ Leonis	4	-32	-80	3 34.0	+ 5 24 56	-1.0957	.5744	-.1671	+9.2302	.9934
25	48 Leonis	6	+90	+39	4 27.8	+ 6 16 55	+1.1463	.5741	-.1679	+9.1234	.9961
25	49 Leonis <i>pr.</i>	6	+ 3	-70	4 33.1	+ 6 21 58	-0.5790	.5740	-.1679	+9.2092	.9942
25	37 Sextantis	6	+90	+18	9 25.8	+11 4 20	+0.8784	.5723	-.1718	+9.0903	.9967
25	ϵ Leonis	5	+35	-32	15 55.5	- 6 39 31	+0.0116	.5700	-.1762	+9.0742	.9969
29	94 Virginis	6	+40	-27	5 45.9	+ 4 19 33	+0.1360	.5508	-.1646	+9.1571	.9956
29	95 Virginis	6	+68	- 4	5 58.1	+ 4 31 20	+0.5487	.5508	-.1644	-9.1786	.9950
30	α Virginis	4½	+81	+33	8 52.9	+ 7 20 28	+1.1094	.5504	-.1620	-9.2245	.9938
30	β Libræ	6	+25	-40	4 36.6	+ 2 26 2	-0.0914	.5492	-.1430	-9.2942	.9914
30	β Libræ	6	-13	-90	5 45.1	+ 3 32 24	-0.7716	.5490	-.1418	-9.2755	.9921
30	18 Libræ <i>pr.</i>	6½	-47	-90	6 46.9	+ 4 32 9	-1.2003	.5490	-.1407	-9.2650	.9925
Oct. 1	γ Libræ	4½	+62	- 4	0 10.5	- 2 37 45	+0.5437	.5484	-.1203	-9.3940	.9862
1	η Libræ	6	+75	+29	4 14.6	+ 1 18 33	+1.0430	.5484	-.1151	-9.4199	.9844
1	45 Libræ	4½	-48	-90	11 0.6	+ 7 51 30	-1.1727	.5482	-0.1062	-9.3804	.9871
1	49 Libræ	5½	+74	+40	12 1.4	+ 8 50 21	+1.1585	.5481	-.1048	-9.4440	.9825
2	ϕ Ophiuchi	5	+22	-36	2 41.5	- 0 57 51	-0.0291	.5478	-.0842	-9.4486	.9821
2	24 Scorpii	5	+73	+15	7 38.5	+ 3 49 38	+0.8422	.5478	-.0769	-9.4777	.9795
2	B. A. C. 5695	6	-13	-82	14 33.8	+10 31 37	-0.6315	.5475	-.0666	-9.4556	.9815
2	B. A. C. 5771	6½	+17	-39	20 23.0	- 7 50 23	-0.0716	.5474	-.0578	-9.4765	.9796
3	B. A. C. 5839	6½	+11	-45	1 56.6	- 2 27 29	-0.1706	.5473	-.0495	-9.4808	.9791
3	B. A. C. 6060	6½	+48	- 7	19 9.3	- 9 47 55	+0.4855	.5465	-.0228	-9.5076	.9763
4	B. A. C. 6267	6	-22	-88	10 33.0	+ 5 6 13	-0.6691	.5458	+0.0016	-9.4871	.9785
4	B. A. C. 6287	6	+38	-14	11 36.3	+ 6 7 26	+0.3625	.5458	+0.0032	-9.5083	.9762
4	B. A. C. 6292	6	+53	- 2	12 9.1	+ 6 39 12	+0.5647	.5458	+0.0039	-9.5123	.9757
4	B. A. C. 6293	6½	+ 8	-43	12 12.1	+ 6 42 9	-0.1421	.5458	+0.0039	-9.4980	.9773
4	B. A. C. 6294	6	+16	-34	12 12.8	+ 6 42 50	+0.0133	.5458	+0.0040	-9.5012	.9770
5	δ Sagittarii	5	+71	+60	10 28.5	+ 4 15 59	+1.2586	.5441	+0.0388	-9.5166	.9752
5	ϵ Sagittarii	4	+27	-27	12 27.5	+ 6 11 10	+0.1305	.5441	+0.0418	-9.4921	.9780
5	ϕ Sagittarii	5½	+63	+ 2	12 31.4	+ 6 14 57	+0.6388	.5441	+0.0419	-9.5026	.9768
5	B. A. C. 6658	6	+72	+16	15 33.0	+ 9 10 47	+0.8529	.5439	+0.0465	-9.5042	.9766
5	ϵ Sagittarii	6	-44	-90	21 43.4	- 8 50 32	-1.0762	.5434	+0.0537	-9.4556	.9815
5	α Sagittarii	5	-58	-90	22 36.0	- 7 59 34	-1.2064	.5431	+0.0570	-9.4515	.9819
6	β Capricor.	3	-60	-90	17 22.5	+10 11 21	-1.2399	.5421	+0.0841	-9.4184	.9845
6	B. A. C. 7063	6	- 4	-71	21 48.3	- 9 31 16	-0.5252	.5418	+0.0900	-9.4267	.9839
7	τ Capricor.	6	+21	-39	1 21.3	- 6 4 53	-0.0781	.5416	+0.0946	-9.4296	.9837
7	τ Capricor.	5	+14	-46	2 18.2	- 5 9 50	-0.1920	.5416	+0.0959	-9.4245	.9841
7	B. A. C. 7145	6½	+74	+40	2 54.3	- 4 34 50	+1.1577	.5415	+0.0968	-9.4556	.9815
7	8 Aquarii	6	-49	-90	12 27.8	+ 4 40 39	-1.1814	.5411	+0.1092	-9.3701	.9877
7	9 Aquarii	6	- 6	-76	13 3.1	+ 5 14 53	-0.5887	.5411	+0.1099	-9.3850	.9868
8	18 Aquarii	6	+33	-30	0 23.1	- 7 46 19	+0.0799	.5409	+0.1241	-9.3663	.9879
8	2 Capricor.	5½	+25	-39	11 24.5	+ 2 54 23	-0.0854	.5408	+0.1363	-9.3169	.9904
8	B. A. C. 7620	6	-11	-90	14 54.3	+ 6 17 41	-0.7337	.5409	+0.1398	-9.2779	.9920
8	ϵ Aquarii	6	+79	+28	23 13.5	- 9 38 45	+1.0462	.5412	+0.1480	-9.2985	.9912
9	B. A. C. 7774	6	+10	-58	2 28.6	- 6 29 28	-0.3911	.5414	+0.1512	-9.2864	.9937
9	67 Aquarii	6	+ 1	-74	15 20.5	+ 5 58 2	-0.5778	.5421	+0.1620	-9.1243	.9961
9	2 Aquarii	4	+82	+15	19 55.9	+10 24 53	+0.8644	.5427	+0.1656	-9.1584	.9954
9	78 Aquarii	6	+75	0	20 53.8	+11 20 55	+0.6206	.5427	+0.1663	-9.1383	.9959
10	81 Aquarii	6	+82	+26	0 14.2	- 9 24 56	+1.0330	.5431	+0.1686	-9.1308	.9960
10	82 Aquarii	6	+ 8	-64	0 48.0	- 8 52 14	-0.4693	.5434	+0.1690	-9.0390	.9974
10	ϕ Aquarii	4½	+84	+26	6 33.0	- 3 18 2	+1.0323	.5441	+0.1727	-9.0708	.9970
10	96 Aquarii	5½	+65	- 8	9 1.0	- 0 54 45	+0.4853	.5446	+0.1741	-9.0072	.9977

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Wash- ington Mean Time of δ.	At Washington Mean Time of Conjunction.						
			North- ern.	South- ern.		H	I	p'	q'	Log sin D	Log cos D	
					^h ^m	^h ^m ^s						
Oct. 10	B.A.C. 8134	6½	+44	-25	9 59.3	+ 0 1 44	+0.1752	0.5449	+1.746	-8.9731	9.9981	
10	20 Piscium	6	+63	-10	22 51.8	-11 30 18	+0.4499	.5473	+1.805	-8.7850	.9992	
11	B.A.C. 8365	6½	+11	-62	7 5.8	- 3 32 2	-0.4334	.5492	+1.831	-8.3338	.9999	
11	44 Piscium	6	-42	-89	16 47.4	+ 5 49 19	-1.2109	.5518	+1.847	+8.3241	.9959	
11	10 Ceti	6	+82	+ 2	17 22.0	+ 6 24 17	+0.6560	.5519	+1.848	-8.1345	.9999	
12	77 Pisc. pr.	7	-12	-86	11 43.9	+ 0 10 5	-0.8245	.5580	+1.837	+8.8652	.9988	
12	B.A.C. 408	6½	+9	+ 9	19 31.5	+ 7 42 25	+0.7631	.5609	+1.813	+8.8426	.9989	
12	μ Piscium	4½	+33	-83	22 54.8	+10 58 32	-0.0874	.5622	+1.801	+8.1784	.9980	
13	B.A.C. 481	6½	-37	-83	1 35.6	-10 26 7	-1.1617	.5632	+1.788	+9.0640	.9968	
13	64 Ceti	6½	+76	+ 1	17 27.3	+ 4 52 58	+0.5961	.5699	+1.689	+9.1418	.9958	
13	ξ Ceti	4½	+62	- 8	18 10.5	+ 5 34 36	+0.4352	.5699	+1.685	+9.1555	.9975	
13	B.A.C. 728	6½	-15	-89	22 40.2	+ 9 54 57	-0.8712	.5720	+1.647	+9.2416	.9930	
13	B.A.C. 741	6½	+57	-11	23 14.4	+10 27 56	+0.3675	.5723	+1.643	+9.1517	.9945	
13	ξ Arietis	5½	+ 5	-63	23 22.1	+10 35 19	-0.5278	.5727	+1.640	+9.2401	.9933	
14	B.A.C. 755	6	+16	-52	0 13.3	+11 24 46	-0.3439	.5727	+1.633	+9.2352	.9934	
14	B.A.C. 830	6	+71	- 1	7 5.5	- 5 57 39	+0.5417	.5758	+1.568	+9.2472	.9931	
14	38 Arietis	5	-23	-78	8 7.9	- 4 57 27	-1.0416	.5761	+1.557	+9.3138	.9946	
14	B.A.C. 987	6½	+34	-30	19 28.9	+ 5 59 7	-0.0144	.5813	+1.425	+9.3369	.9955	
15	γ Tauri	4	+9	+47	3 44.6	-10 3 18	+1.1828	.5847	+1.315	+9.3347	.9956	
15	Wei. III. 1085	8½	+84	+10	17 36.5	+ 3 17 39	+0.6631	.5901	+1.104	+9.4633	.9856	
15	Weis. IV. 24	9	+90	+14	20 16.3	+ 5 51 26	+0.7106	.5907	+1.063	+9.4098	.9872	
15	Lal. 7753	7½	+35	-25	20 21.0	+ 5 55 56	0.0000	.5907	+1.062	+9.4224	.9837	
15	B.A.C. 1231	7	- 6	-73	20 23.6	+ 5 58 27	-0.7045	.5908	+1.058	+9.4422	.9842	
15	Rumk. 1103	7	+55	- 7	20 27.5	+ 6 2 15	+0.3340	.5911	+1.066	+9.4248	.9844	
15	Rumk. 1108	9	+90	+40	20 53.8	+ 6 27 33	+1.1777	.5911	+1.051	+9.4012	.9858	
15	Rumk. 1110		-63	-73	20 58.6	+ 6 32 10	-1.2844	.5911	+1.051	+9.4643	.9877	
15	Rumk. 1123	8½	+90	+52	21 41.4	+ 7 13 22	+1.1165	.5912	+1.033	+9.4002	.9858	
15	48 Tauri	6	+90	+17	22 21.0	+ 7 51 23	+0.7476	.5913	+1.024	+9.4149	.9848	
15	Rumk. 1136	6	+33	-27	22 46.0	+ 8 15 31	-0.0564	.5914	+1.019	+9.4372	.9830	
15	γ Tauri	4	+88	+13	23 59.6	+ 9 26 21	+0.6728	.5920	+1.009	+9.4215	.9843	
16	55 Tauri	7	+22	-38	0 1.5	+ 9 28 10	-0.2304	.5920	+1.008	+9.4456	.9824	
16	58 Tauri	6	+90	+59	0 19.9	+ 9 45 48	+1.2428	.5922	+1.003	+9.4065	.9854	
16	Rumk. 1161		-52	-73	0 38.3	+10 3 31	-1.2394	.5924	+1.007	+9.4723	.9800	
16	Rumk. 1163	8	+ 9	-53	0 40.6	+10 5 44	-0.4567	.5924	+1.006	+9.4538	.9818	
16	δ Tauri	4	-40	-73	1 14.5	+10 38 20	-1.1497	.5926	+1.007	+9.4716	.9801	
16	63 Tauri	6	+15	-46	1 27.3	+10 50 40	-0.3578	.5926	+1.007	+9.4525	.9818	
16	B.A.C. 1351	6½	+23	-36	1 28.9	+10 52 12	-0.2053	.5927	+1.007	+9.4426	.9821	
16	δ Tauri	6	-27	-73	1 43.1	+11 5 51	-1.0079	.5928	+1.006	+9.4682	.9803	
16	Lal. 8249	7½	- 1	-66	1 50.0	+11 12 33	-0.6822	.5928	+1.006	+9.4602	.9811	
16	Lal. 8256	8	+10	-50	1 52.5	+11 14 58	-0.4288	.5928	+1.006	+9.4553	.9816	
16	70 Tauri	7	+75	+ 7	2 22.5	+11 43 45	+0.5717	.5929	+1.005	+9.4306	.9826	
16	Lal. 8311	8	+90	+35	2 34.3	+11 55 8	+1.0083	.5930	+1.005	+9.4192	.9845	
16	Rumk. 1188	6½	+90	+36	2 34.5	+11 55 18	+1.0097	.5930	+1.005	+9.4192	.9845	
16	Rumk. 1189		+16	-44	2 40.4	-11 58 58	-0.3253	.5930	+1.005	+9.4546	.9816	
16	71 Tauri	6	+90	+29	2 40.5	-11 58 52	+0.9245	.5930	+1.005	+9.4218	.9843	
16	Rumk. 1192		- 1	-66	2 43.3	-11 56 14	-0.6250	.5930	+1.005	+9.4622	.9809	
16	Rumk. 1198	6	+90	+39	2 59.0	-11 41 8	+1.0493	.5931	+1.004	+9.4191	.9845	
16	Rumk. 1200		+90	+35	3 11.1	-11 29 25	+0.9977	.5931	+1.004	+9.4211	.9843	
16	Rumk. 1203		+54	- 7	3 28.9	-11 12 23	+0.3043	.5932	+1.003	+9.4404	.9828	
16	75 Tauri	6	+49	-10	3 31.4	-11 9 59	+0.2500	.5932	+1.003	+9.4419	.9827	
16	δ Tauri	4½	+85	+12	3 34.7	-11 6 45	+0.6546	.5932	+1.003	+9.4314	.9826	
16	δ Tauri	4½	+90	+18	3 37.0	-11 4 31	+0.7506	.5932	+1.003	+9.4209	.9837	
16	Rumk. 1210		+66	+ 2	3 44.6	-10 57 13	+0.4693	.5933	+1.002	+9.4369	.9831	
16	Rumk. 1212	6	-20	-73	3 51.5	-10 50 37	-0.9219	.5933	+1.002	+9.4722	.9801	
16	Rumk. 1214		-52	-73	3 55.0	-10 47 13	-1.2374	.5933	+1.002	+9.4798	.9792	

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			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Oct. 16	Rumk. 1215	7	-59	-73	3 55.6	-10 46 41	-1.2679	0.5933	+0.0929	+9.4805	9.9792
16	80 Tauri <i>pr.</i>	6	+90	+38	4 13.6	-10 29 21	+1.0382	.5934	+0.0923	+9.4226	.9842
16	B.A.C. 1391	5	+68	+3	4 23.0	-10 20 15	+0.4893	.5934	+0.0920	+9.4378	.9830
16	81 Tauri	5½	+90	+35	4 25.9	-10 17 29	+1.0009	.5934	+0.0920	+9.4242	.9841
16	B.A.C. 1304	7	+72	+6	4 28.6	-10 14 55	+0.5380	.5935	+0.0919	+9.4367	.9831
16	Rumk. 1227	7	+90	+23	4 43.2	-10 0 51	+0.9005	.5935	+0.0914	+9.4276	.9838
16	85 Tauri	6	+90	+27	4 55.4	-9 49 8	+0.8812	.5936	+0.0912	+9.4286	.9838
16	Rumk. 1232		+43	-16	5 7.1	-9 37 52	+0.1418	.5936	+0.0909	+9.4485	.9821
16	Rumk. 123		-37	-73	5 12.9	-9 32 16	-1.1264	.5937	+0.0907	+9.4800	.9792
16	Rumk. 1235		+90	+19	5 18.8	-9 26 39	+0.7374	.5937	+0.0905	+9.4329	.9834
16	B.A.C. 1406	7	+65	+2	5 39.5	-9 6 42	+0.4634	.5939	+0.0899	+9.4414	.9827
16	Rumk. 1238	10	+53	-7	5 58.4	-8 48 30	+0.3026	.5940	+0.0893	+9.4464	.9823
16	Lal. 8599	9	-22	-73	6 2.3	-8 44 46	-0.9467	.5940	+0.0892	+9.4775	.9795
16	Lal. 8610	8	+25	-34	6 10.3	-8 37 5	-0.1766	.5940	+0.0889	+9.4590	.9812
16	Lal. 8613	8	+13	-46	6 11.6	-8 35 52	-0.3791	.5940	+0.0889	+9.4640	.9808
16	α Tauri	1	+56	-5	6 33.9	-8 14 26	+0.3451	.5941	+0.0882	+9.4466	.9823
16	89 Tauri	7	+90	+29	7 29.5	-7 20 54	+0.9059	.5943	+0.0866	+9.4341	.9833
16	α^1 Tauri	5½	+90	+51	7 53.8	-6 57 31	+1.1733	.5944	+0.0858	+9.4278	.9838
16	α^2 Tauri	5½	+90	+41	7 56.4	-6 55 0	+1.0588	.5946	+0.0857	+9.4310	.9836
16	Rumk. 1241		+66	+2	8 10.9	-6 41 3	+0.4670	.5946	+0.0853	+9.4471	.9823
16	Rumk. 1243	8	+63	+4	8 23.5	-6 28 58	+0.4906	.5947	+0.0849	+9.4469	.9823
16	Rumk. 1246	7	+13	-46	8 50.1	-6 3 25	-0.3820	.5948	+0.0840	+9.4697	.9802
16	Rumk. 1247		+55	-5	8 50.4	-6 3 7	+0.3314	.5948	+0.0840	+9.4520	.9818
16	Rumk. 1254		+59	-2	9 5	-5 48 15	+0.3759	.5949	+0.0835	+9.4514	.9819
16	Rumk. 1255		+90	+44	9 7.0	-5 47 7	+1.0660	.5949	+0.0835	+9.4327	.9834
16	Lal. 8852	9½	+21	-37	9 24.9	-5 29 53	-0.2376	.5950	+0.0829	+9.4674	.9805
16	Rumk. 1263	9½	+90	+42	10 2.0	-5 54 16	+1.0757	.5951	+0.0819	+9.4352	.9832
16	Rumk. 1263	8½	+90	+62	10 36.2	-4 20 47	+1.2480	.5952	+0.0809	+9.4319	.9835
16	Rumk. 1263	7	+80	+11	11 44.3	-3 16 0	+0.6147	.5954	+0.0787	+9.4508	.9820
16	Rumk. 1294		+90	+46	12 36.5	-2 25 41	+1.1074	.5956	+0.0771	+9.4398	.9829
16	Rumk. 1299	7½	+14	-44	13 0.3	-2 2 49	-0.3604	.5957	+0.0764	+9.4772	.9795
16	Rumk. 1300		+17	-40	13 2.6	-2 0 37	-0.3040	.5957	+0.0763	+9.4760	.9796
16	B.A.C. 1526	6	+55	-4	15 14.6	+0 6 20	+0.3309	.5962	+0.0722	+9.4645	.9807
16	<i>m</i> Tauri	5½	-21	-72	19 14.8	+3 57 18	-0.9313	.5970	+0.0645	+9.5006	.9770
17	111 Tauri	6	+90	+18	2 6.5	+10 33 5	+0.6815	.5983	+0.0509	+9.4722	.9800
17	115 Tauri	5½	+43	-12	3 12.6	+11 36 34	+0.1439	.5984	+0.0488	+9.4863	.9786
17	117 Tauri	6	+90	+31	3 34.2	+11 57 22	+0.8869	.5985	+0.0477	+9.4690	.9803
17	119 Tauri	5½	+11	-45	5 13.0	-10 27 42	-0.4156	.5987	+0.0447	+9.5013	.9770
17	B.A.C. 1728	6½	+90	+51	5 15.7	-10 25 5	+1.1374	.5987	+0.0446	+9.4648	.9807
17	123 Tauri	6	+15	-40	5 44.6	-9 57 16	-0.3422	.5988	+0.0434	+9.5001	.9771
17	122 Tauri	6	+90	+61	7 11.4	-8 33 51	+1.2190	.5990	+0.0410	+9.4648	.9807
17	130 Tauri	6	+84	+17	11 19.4	-4 35 34	+0.6418	.5994	+0.0323	+9.4823	.9790
17	B.A.C. 1930	6½	+90	+29	17 31.2	+1 21 44	+0.8147	.5995	+0.0191	+9.4820	.9790
17	γ^2 Orionis	5	-53	-71	17 40.5	+1 30 41	-1.2269	.5996	+0.0188	+9.5275	.9738
17	71 Orionis	5½	-4	-63	22 14.3	+5 53 48	-0.6660	.5996	+0.0007	+9.5169	.9751
18	26 Geminor.	5½	+90	+26	9 16.4	-7 29 54	+0.7511	.5999	-0.0133	+9.4846	.9788
19	B.A.C. 2432	6½	+6	-51	1 36.5	+8 12 12	-0.5035	.5959	-0.0470	+9.5020	.9769
19	<i>f</i> Geminor.	6	+18	-38	8 15.7	-9 23 58	-0.3006	.5944	-0.0596	+9.4893	.9783
19	1 Cancri	6	+90	+43	15 26.8	-2 29 17	+1.0762	.5920	-0.0736	+9.4440	.9825
19	3 Cancri	6	+1	-61	16 58.3	-1 1 19	-0.5857	.5916	-0.0762	+9.4891	.9790
19	5 Cancri	6	+50	-8	17 16.9	-0 43 25	+0.2530	.5914	-0.0766	+9.4613	.9810
19	B.A.C. 2731	6½	-1	-64	20 46.2	+2 37 46	-0.6189	.5903	-0.0832	+9.4757	.9796
20	54 Cancri	6½	-6	-74	13 53.4	-4 53 12	-0.7096	.5839	-0.1120	+9.4360	.9832
20	α^1 Cancri	6	-25	-74	16 30.4	-2 21 57	-0.9977	.5828	-0.1162	+9.4357	.9832
21	ξ Leonis	6	+90	+41	7 24.6	+11 59 44	+1.1391	0.5768	-0.1372	+9.3137	9.9906

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			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Oct. 21	18 Leonis	6	+18	-47	13 40.0	-5 58 18	-0.2957	0.5741	-1.1449	+9.3325	9.9897
	21 B.A.C. 3345	6	+36	-29	14 10.9	-5 28 29	+0.0162	.5740	-1.1453	+9.3193	.9903
	21 A Leonis	5	+40	-25	23 8.3	+3 9 55	+0.0961	.5704	-1.1552	+9.2665	.9925
	22 B.A.C. 3538	6½	+42	-24	5 30.5	+9 18 51	+0.1255	.5679	-1.1616	+9.2234	.9938
	22 44 Leonis	6	+40	-27	6 51.2	+10 36 44	+0.0878	.5675	-1.1627	+9.2156	.9941
	22 B.A.C. 3562	6½	+39	-27	7 0.5	+10 45 43	+0.0739	.5675	-1.1628	+9.2151	.9941
	22 45 Leonis	6	-32	-80	7 55.0	+11 38 18	-1.0917	.5673	-1.1636	+9.2570	.9927
	22 ϵ Leonis	4	-25	-80	10 14.1	-10 7 25	-1.0127	.5665	-1.1656	+9.2391	.9934
	22 48 Leonis	6	+90	+51	11 9.4	-9 14 3	+1.2517	.5660	-1.1664	+9.1234	.9961
	22 37 Sextantis	6	+90	+24	16 14.7	-4 19 10	+0.9763	.5643	-1.1702	+9.0902	.9967
	22 c Leonis	5	+40	-28	22 54.1	+2 6 40	+0.0934	.5620	-1.1749	+9.0741	.9969
	23 r Leonis	5	+90	+42	11 23.7	-9 48 55	+1.2014	.5582	-1.1812	+8.7162	.9991
	23 89 Leonis	6	+63	-10	14 23.1	-6 55 34	+0.4412	.5574	-1.1823	+8.8209	.9990
	23 β Virginis	3½	+59	-13	21 55.1	+0 21 29	+0.3922	.5557	-1.1845	+8.6417	.9996
	24 B.A.C. 4043	6½	+90	+21	1 52.7	+4 11 19	+0.9548	.5550	-1.1852	+8.3453	9.9909
	24 13 Virginis	6	+79	0	11 0.6	-10 58 56	+0.6317	.5532	-1.1859	-6.9353	0.0000
	24 η Virginis	3½	+58	-14	11 40.6	-10 20 6	+0.3825	.5531	-1.1859	+7.0930	.0000
	24 γ Virginis pr.	2½	-5	-89	21 59.7	-0 21 3	-0.7057	.5517	-1.1851	-8.1012	.0000
	24 B.A.C. 4277	6	-7	-90	22 53.1	+0 30 31	-0.7427	.5514	-1.1848	-8.1679	0.0000
	25 38 Virginis	6	+67	-7	3 26.2	+4 54 52	+0.5010	.5509	-1.1838	-8.6937	9.9995
	25 k Virginis	6	+47	-23	6 29.9	+7 52 35	+0.2157	.5507	-1.1829	-8.7321	.9994
	25 γ Libræ	4½	+55	-10	8 43.0	+7 42 36	+0.4387	.5502	-1.1820	-9.3940	.9962
	26 η Libræ	6	+75	+21	12 46.2	+11 37 56	+0.9324	.5504	-1.1168	-9.4199	.9844
	26 48 Libræ	4½	-68	-90	19 30.2	-5 51 3	-1.2121	.5507	-1.1078	-9.3804	.9871
	26 49 Libræ	5½	+74	+29	20 30.7	-4 52 32	+1.0375	.5507	-1.1064	-9.4439	.9825
	29 ϕ Ophiuchi	5	+15	-45	11 5.2	+9 13 44	-0.1683	.5507	-1.0660	-0.4486	.9821
	29 24 Scorpil	5	+71	+5	16 0.1	-10 0 53	+0.6861	.5507	-1.0767	-9.4776	.9795
	29 B.A.C. 5695	6	-22	-90	22 52.4	-3 22 0	-0.7840	.5507	-1.0633	-9.4556	.9815
	30 B.A.C. 5771	6½	+8	-49	4 30.0	+2 13 24	-0.2309	.5504	-1.0593	-9.4765	.9796
	30 B.A.C. 5839	6½	+2	-56	10 10.2	+7 33 52	-0.3355	.5503	-1.0509	-9.4908	.5791
	31 B.A.C. 6060	6½	+36	-17	3 15.8	+0 6 22	+0.3042	.5503	-1.0238	-9.5076	.9763
	31 B.A.C. 6267	6	-34	-90	18 38.8	-9 0 12	-0.8620	.5474	+0.0010	-9.4871	.9785
	31 B.A.C. 6287	6	+25	-25	19 37.8	-8 3 15	+0.1638	.5473	+0.0026	-9.5083	.9762
	31 B.A.C. 6292	6	+38	-14	20 10.5	-7 31 36	+0.3705	.5471	+0.0032	-9.5123	.9757
	31 B.A.C. 6293	6½	-3	-56	20 13.5	-7 28 42	-0.3362	.5471	+0.0033	-9.4980	.9773
Nov. 31	B.A.C. 6294	6	+6	-46	20 14.2	-7 28 0	-0.1808	.5471	+0.0033	-9.5012	.9770
	1 B.A.C. 6336	6	+71	+55	13 55.9	+9 39 43	+1.2338	.5449	+0.0312	-9.5233	.9744
	1 d Sagittarii	5	+71	+31	18 27.8	-9 56 57	+1.0537	.5441	+0.0384	-9.5166	.9752
	1 e^1 Sagittarii	4	+15	-39	20 26.9	-8 1 38	-0.0770	.5438	+0.0414	-9.4921	.9780
	1 e^2 Sagittarii	5½	+46	-10	20 30.8	-7 57 51	+0.4321	.5438	+0.0415	-9.5026	.9768
	1 B.A.C. 6659	6	+64	+2	23 32.7	-5 1 46	+0.6455	.5433	+0.0461	-9.5042	.9766
	3 B.A.C. 7063	6	-17	-90	5 57.3	+0 25 35	-0.7423	.5389	+0.0815	-9.4267	.9839
	3 B.A.C. 7097	6	+73	+38	8 36.5	+2 59 47	+1.1376	.5384	+0.0932	-9.4653	.9806
	3 r^1 Capricor.	6	+9	-53	9 32.3	+3 53 52	-0.2936	.5384	+0.0944	-9.4216	.9837
	3 r^2 Capricor.	5	+3	-61	10 29.7	+4 49 31	-0.4079	.5383	+0.0957	-9.4246	.9841
	3 B.A.C. 7145	6½	+74	+22	11 6.1	+5 24 47	+0.9478	.5383	+0.0963	-9.4556	.9815
	3 9 Aquarii	6	-19	-90	21 21.4	-8 39 1	-0.8050	.5370	+1.0992	-9.3850	.9868
	4 18 Aquarii	6	+21	-41	8 49.9	+2 28 20	-0.1207	.5360	+1.1231	-9.3663	.9879
	4 B.A.C. 7487	6½	+76	+42	13 51.5	+7 20 38	+1.1890	.5358	+1.1287	-9.3857	.9868
	4 λ Capricor.	5½	+14	-51	20 0.6	-10 41 39	-0.2905	.5355	+1.1353	-9.3169	.9904
	4 B.A.C. 7620	6	-24	-90	23 33.6	-7 15 12	-0.9402	.5354	+1.1391	-9.2779	.9920
	5 e^1 Aquarii	6	+79	+14	8 0.4	+0 56 6	+0.8557	.5356	+1.1473	-9.2985	.9912
	5 B.A.C. 7774	6	-1	-76	11 12.5	+4 2 18	-0.5124	.5358	+1.1502	-9.2864	.9937
	6 67 Aquarii	6	-9	-90	0 22.6	-7 11 54	-0.7461	.5365	+1.1615	-9.1243	.9961
	6 λ Aquarii	4	+81	+4	5 2.3	-2 40 47	+0.6925	0.5370	+1.1649	-9.1584	9.9954

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallel.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>Y</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
					^h ^m ^s	^h ^m ^s					
Nov. 6	78 Aquarii	6	+61	-10	6 1.1	- 1 43 51	+0.4485	0.5370	+1656	-9.1383	9.9958
6	81 Aquarii	6	+82	+14	9 24.5	+ 1 33 20	+0.8666	.5376	+1681	-9.1308	.9960
6	82 Aquarii	6	+61	-11	9 58.8	+ 2 6 33	+0.4308	.5377	+1684	-9.1029	.9965
6	9 Aquarii	4	+84	+15	15 48.9	+ 7 45 49	+0.8738	.5386	+1721	-9.0708	.9970
6	96 Aquarii	5	+53	-17	18 18.9	+10 11 11	+0.3269	.5393	+1736	-9.0079	.9977
6	B.A.C. 8134	6	+35	-34	19 18.1	+11 8 31	+0.0170	.5394	+1741	-8.9731	.9981
7	20 Piscium	6	+53	-18	8 20.4	- 0 13 38	+0.3117	.5424	+1805	-8.7851	.9992
7	24 Piscium	6	+86	+37	10 46.3	+ 2 7 39	+1.1655	.5431	+1815	-8.8311	.9990
7	B.A.C. 8365	6	+4	-72	16 39.7	+ 7 49 53	-0.5601	.5451	+1834	-8.3339	9.9999
8	10 Ceti	6	+90	+15	3 1.0	- 6 8 41	+0.8720	.5487	+1855	-8.1338	0.0000
8	77 Pisc. pr.	7	-16	-80	21 27.2	+11 41 23	-0.8947	.5568	+1851	+8.2652	9.9998
9	B.A.C. 408	6	+89	+5	5 14.8	- 4 46 38	+0.7049	.5603	+1833	+8.8486	.9989
9	14 Piscium	4	+27	-42	8 37.2	- 1 31 4	-0.1360	.5623	+1823	+8.9785	.9980
9	B.A.C. 481	6	-41	-83	11 17.3	+ 1 3 38	-1.2006	.5636	+1811	+9.0830	.9968
10	64 Ceti	6	+75	0	3 1.9	- 7 44 28	+0.5830	.5723	+1719	+9.1408	.9958
10	81 Ceti	4	+62	-9	3 44.6	- 7 3 17	+0.4247	.5727	+1714	+9.1555	.9955
10	B.A.C. 728	6	-14	-80	8 11.2	- 2 46 7	-0.2632	.5750	+1679	+9.2496	.9930
10	B.A.C. 741	6	+58	-12	8 44.9	- 2 13 33	+0.3680	.5757	+1673	+9.1908	.9945
10	8 Arietis	5	+6	-65	8 52.5	- 2 6 16	-0.5206	.5758	+1673	+9.2401	.9933
10	B.A.C. 755	6	+16	-52	9 43.0	- 1 17 30	-0.3361	.5761	+1664	+9.2382	.9934
10	B.A.C. 830	6	+73	0	16 20.2	+ 5 14 4	+0.5583	.5801	+1600	+9.2471	.9931
10	38 Arietis	5	-25	-78	17 30.6	+ 6 13 15	-1.0104	.5809	+1590	+9.3132	.9906
11	B.A.C. 987	6	+37	-27	4 30.1	- 7 2 44	+0.0319	.5869	+1462	+9.3369	.9895
11	7 Tauri	4	+90	+53	12 44.1	+ 0 44 8	+1.2331	.5917	+1353	+9.3347	.9896
12	Wei. III. 1085	8	+90	+15	2 15.1	-10 15 52	+0.7357	.5983	+1143	+9.4033	.9856
12	Lal. 7753	7	+40	-20	4 55.2	- 7 42 0	+0.0964	.5995	+1096	+9.4294	.9837
12	B.A.C. 1281	7	+1	-64	4 58.9	- 7 38 20	-0.5969	.5995	+1085	+9.4482	.9822
12	Rumk. 1103	7	+62	-2	5 1.5	- 7 35 54	+0.4262	.5999	+1076	+9.4208	.9844
12	48 Tauri	6	+90	+22	6 51.8	- 5 49 53	+0.8381	.6003	+1062	+9.4149	.9848
12	Rumk. 1136	6	+39	-21	7 16.2	- 5 26 27	+0.0650	.6005	+1056	+9.4372	.9831
12	7 Tauri	4	+90	+18	8 27.7	- 4 17 44	+0.7672	.6010	+1033	+9.4215	.9843
12	55 Tauri	7	+28	-32	8 20.6	- 4 15 56	-0.1241	.6010	+1032	+9.4456	.9824
12	Rumk. 1163	8	+15	-45	9 8.3	- 3 38 43	-0.3447	.6012	+1032	+9.4530	.9818
12	81 Tauri	4	-28	-73	9 40.4	- 3 7 52	-1.0287	.6015	+1011	+9.4716	.9801
12	63 Tauri	6	+21	-30	9 52.9	- 2 55 54	-0.2469	.6016	+1007	+9.4525	.9818
12	B.A.C. 1351	6	+29	-30	9 54.3	- 2 54 33	-0.0966	.6016	+1007	+9.4486	.9821
12	81 Tauri	6	-17	-73	10 8.2	- 2 41 11	-0.8878	.6017	+1007	+9.4692	.9803
12	Lal. 8249	7	+6	-57	10 15.0	- 2 34 41	-0.5139	.6018	+1001	+9.4602	.9811
12	Lal. 8256	8	+17	-43	10 17.4	- 2 32 21	-0.3163	.6018	+1000	+9.4553	.9816
12	70 Tauri	7	+88	+13	10 46.5	- 2 4 26	+0.6716	.6020	+0991	+9.4305	.9836
12	Lal. 8311	8	+90	+43	10 56.0	- 1 53 23	+1.1031	.6021	+0988	+9.4192	.9845
12	Rumk. 1188	6	+90	+43	10 58.1	- 1 53 12	+1.1043	.6021	+0987	+9.4192	.9845
12	71 Tauri	6	+90	+36	11 4.0	- 1 47 35	+1.0208	.6022	+0986	+9.4215	.9843
12	Rumk. 1198	6	+90	+47	11 21.9	- 1 30 21	+1.1437	.6022	+0980	+9.4191	.9845
12	75 Tauri	6	+58	-5	11 53.4	- 1 0 7	+0.3564	.6024	+0971	+9.4419	.9827
12	81 Tauri	4	+90	+18	11 56.6	- 0 57 2	+0.7558	.6024	+0970	+9.4314	.9836
12	81 Tauri	4	+90	+24	11 58.9	- 0 54 50	+0.8505	.6024	+0969	+9.4289	.9837
12	Rumk. 1212	6	-11	-73	12 12.9	- 0 41 23	-0.7989	.6025	+0965	+9.4721	.9800
12	Rumk. 1215	7	-39	-73	12 16.9	- 0 37 34	-1.1402	.6026	+0964	+9.4805	.9792
12	80 Tauri pr.	6	+90	+47	12 34.4	- 0 20 45	+1.1355	.6027	+0959	+9.4226	.9842
12	B.A.C. 1391	5	+78	+9	12 43.5	- 0 11 57	+0.5942	.6028	+0956	+9.4377	.9830
12	81 Tauri	5	+90	+43	12 46.3	- 0 9 16	+1.0993	.6028	+0955	+9.4242	.9841
12	B.A.C. 1394	7	+84	+11	12 48.9	- 0 6 45	+0.6424	.6028	+0954	+9.4367	.9831
12	Rumk. 1227	7	+90	+35	13 3.2	+ 0 6 54	+1.0092	.6029	+0949	+9.4276	.9838
12	85 Tauri	6	+90	+34	13 14.9	+ 0 18 13	+0.9815	.6029	+0942	+9.4286	9.9838

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- arn.	South- arn.		<i>H</i>	<i>I</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Nov. 12	B.A.C. 1406	7	+75	+8	13 56.8	+ 0 58 25	+0.5711	0.6030	+0.0932	+9.4414	0.9827
12	Lal. 8610	8	+32	-27	14 27.6	+ 1 28 2	-0.0595	.6033	+0.0222	+9.4590	.9812
12	Lal. 8613	8	+20	-39	14 28.9	+ 1 29 13	-0.2592	.6034	+0.0922	+9.4640	.9808
12	α Tauri	1	+65	+1	14 50.5	+ 1 50 2	+0.4559	.6035	+0.0915	+9.4466	.9823
12	89 Tauri	7	+90	+36	15 44.1	+ 2 41 28	+1.0102	.6038	+0.0898	+9.4341	.9833
12	σ^1 Tauri	5½	+90	+67	16 8.1	+ 3 4 34	+1.2750	.6039	+0.0889	+9.4278	.9838
12	σ^2 Tauri	5½	+90	+50	16 10.6	+ 3 7 0	+1.1620	.6040	+0.0889	+9.4310	.9836
12	Rumk. 1243	8	+79	+10	16 36.9	+ 3 32 13	+0.6027	.6042	+0.0880	+9.4469	.9823
12	Rumk. 1246	7	+20	-38	17 2.6	+ 3 56 56	-0.2572	.6042	+0.0874	+9.4617	.9812
12	Rumk. 1283	7	+90	+18	19 51.8	+ 6 39 25	+0.7311	.6052	+0.0819	+9.4508	.9820
12	Rumk. 1299	7½	+22	-36	21 5.3	+ 7 49 58	-0.2281	.6055	+0.0796	+9.4772	.9716
12	B.A.C. 1526	6	+65	+3	23 15.8	+ 9 55 20	+0.4576	.6062	+0.0753	+9.4645	.9817
13	m Tauri	5½	-10	-72	3 8.2	-10 21 37	-0.7804	.6073	+0.0674	+9.5006	.9770
13	111 Tauri	6	+90	+26	9 46.9	- 3 58 52	+0.8215	.6086	+0.0533	+9.4722	.9800
13	115 Tauri	5½	+53	-4	10 50.8	- 2 57 29	+0.2924	.6086	+0.0511	+9.4863	.9766
13	117 Tauri	6	+90	+41	11 11.7	- 2 37 24	+1.0257	.6088	+0.0506	+9.4690	.9803
13	119 Tauri	5½	+20	-34	12 47.4	- 1 5 38	-0.2559	.6091	+0.0469	+9.5013	.9770
13	120 Tauri	6	+24	-30	13 18.0	- 0 36 14	-0.1838	.6093	+0.0461	+9.5001	.9771
13	130 Tauri	6	+90	+27	18 42.0	+ 4 34 43	+0.7960	.6097	+0.0341	+9.4823	.9790
13	χ^2 Orionis	6	-41	-71	21 33.5	+ 7 19 17	-1.1484	.6098	+0.0278	+9.5282	.9737
14	B.A.C. 1930	6½	+90	+40	0 41.9	+10 20 3	+0.9754	.6098	+0.0210	+9.4820	.9790
14	χ^2 Orionis	5	-30	-71	0 50.9	+10 28 42	-1.0353	.6098	+0.0207	+9.5275	.9738
14	68 Orionis	6	-37	-70	4 9.3	-10 20 54	-1.1071	.6098	+0.0136	+9.5342	.9735
14	71 Orionis	5½	+8	-46	5 16.0	- 9 16 53	-0.4776	.6098	+0.0112	+9.5161	.9752
14	26 Geminor.	5½	+90	+38	15 57.7	+ 0 58 54	+0.9341	.6098	-0.0125	+9.4846	.9788
15	B.A.C. 2432	6½	+19	-36	7 49.8	- 7 47 5	-0.2858	.6042	-0.0465	+9.5020	.9760
15	f Geminor.	6	+30	-25	14 18.7	- 1 33 34	-0.0716	.6020	-0.0516	+9.4813	.9783
15	g Geminor.	5½	-36	-71	16 56.2	+ 0 57 49	-1.1020	.6016	-0.0630	+9.5188	.9761
15	3 Cancri	6	+15	-43	22 49.0	+ 6 36 36	-0.3551	.5981	-0.0765	+9.4821	.9790
15	5 Cancri	6	+59	+4	23 7.1	+ 6 54 14	+0.4757	.5981	-0.0769	+9.4613	.9810
16	B.A.C. 2731	6½	+13	-46	2 31.9	+10 11 6	-0.3856	.5965	-0.0840	+9.4757	.9716
16	ζ^1 Cancri	4½	-35	-72	3 24.2	+11 1 18	-1.1046	.5959	-0.0853	+9.4909	.9711
16	ζ^2 Cancri	7½	-35	-72	3 24.3	+11 1 25	-1.1020	.5959	-0.0853	+9.4909	.9711
16	δ^2 Cancri	6	-29	-73	8 57.5	- 7 38 8	-1.0334	.5929	-0.051	+9.4776	.9715
16	54 Cancri	6½	+9	-55	19 21.1	+ 2 21 48	-0.4686	.5880	-0.1124	+9.4360	.9832
16	σ^1 Cancri	6	-8	-74	21 55.9	+ 4 50 52	-0.7539	.5864	-0.1166	+9.4357	.9832
16	σ^2 Cancri	6	-28	-74	22 4.1	+ 4 58 33	-1.0323	.5864	-0.1166	+9.4426	.9826
17	π^1 Cancri	6½	-48	-75	4 17.5	+10 58 19	-1.2246	.5829	-0.1260	+9.4276	.9838
17	18 Leonis	6	+32	-33	18 54.3	+ 1 3 20	-0.0559	.5747	-0.1453	+9.3325	.9817
17	B.A.C. 3345	6	+50	-16	19 25.1	+ 1 33 1	+0.2550	.5743	-0.1460	+9.3193	.9903
18	A Leonis	5	+55	-13	4 21.3	+10 10 15	+0.3327	.5696	-0.1555	+9.2665	.9925
18	B.A.C. 3538	6½	+57	-12	10 43.9	- 7 40 32	+0.3627	.5662	-0.1617	+9.2233	.9838
18	44 Leonis	6	+54	-14	12 4.8	- 6 22 24	+0.3214	.5657	-0.1629	+9.2156	.9840
18	B.A.C. 3562	6½	+53	-15	12 14.2	- 6 13 22	+0.3074	.5657	-0.1630	+9.2151	.9841
18	45 Leonis	6	-14	-80	13 8.8	- 5 20 38	-0.6888	.5653	-0.1638	+9.2579	.9827
18	ϵ Leonis	4	-9	-80	15 28.4	- 3 5 48	-0.7816	.5638	-0.1658	+9.2390	.9834
18	49 Leonis pr.	6	+20	-48	16 29.3	- 2 7 3	-0.2611	.5634	-0.1666	+9.2034	.9842
18	37 Sextantis	6	+90	+44	21 30.8	+ 2 44 16	+1.2053	.5612	-0.1704	+9.0901	.9869
19	ϵ Leonis	5	+54	-16	4 13.3	+ 9 13 10	+0.3157	.5583	-0.1747	+9.0741	.9869
19	χ Leonis	5	-59	-82	6 12.0	+11 7 54	-1.3125	.5574	-0.1759	+9.1462	.9857
19	σ Leonis	4	-56	-84	13 40.0	- 5 39 0	-1.3014	.5545	-0.1796	+9.0704	.9970
19	89 Leonis	6	+82	+2	19 52.5	+ 0 21 16	+0.6489	.5525	-0.1819	+8.8217	.9990
20	β Virginis	3½	+75	-2	3 31.0	+ 7 44 46	+0.5903	.5502	-0.1841	+8.6415	.9966
20	B.A.C. 4043	6½	+90	+36	7 32.4	+11 38 19	+1.1474	.5490	-0.1848	+8.3448	.9999
20	10 Virginis	6	-44	-88	12 36.3	- 7 27 35	-1.2277	0.5477	-0.1854	+8.6635	9.9995

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Nov. 20	13 Virginis	6	+90	+10	16 54.2	— 3 17 57	+0.7965	0.5470	— .1856	— 6.9445	0.0060
20	γ Virginis	3½	+72	— 4	17 30.1	— 2 43 13	+0.5516	.5469	— .1856	+7.1863	0.0000
21	γ Virginis <i>pr.</i>	2½	+ 4	—72	4 0.5	+ 7 27 7	—0.5535	.5451	— .1847	— 8.1008	0.0060
21	B. A. C. 4277	6	+ 2	—75	4 54.8	+ 8 19 40	—0.5924	.5450	— .1845	— 8.1624	0.0000
21	38 Virginis	6	+81	+ 1	9 33.1	—11 10 48	+0.6510	.5445	— .1835	— 8.6937	9.9995
21	k Virginis	6	+56	—15	12 40.3	— 8 9 31	+0.3578	.5441	— .1827	— 8.7323	.9994
21	46 Virginis	6½	+24	—46	13 7.7	— 7 42 58	—0.1919	.5441	— .1826	— 8.6656	.9995
21	48 Virginis	6	+25	—45	14 43.9	— 6 9 52	—0.1729	.5440	— .1821	— 8.7112	.9994
21	δ Virginis <i>tr.</i>	4½	+85	+53	17 30.1	— 3 20 11	+1.2897	.5438	— .1811	— 8.1253	.9924
22	65 Virginis	6	+ 6	—69	0 9.1	+ 2 57 30	—0.5159	.5435	— .1786	— 8.8678	.9988
22	66 Virginis	6	+14	—57	0 44.4	+ 3 31 42	—0.3660	.5435	— .1783	— 8.8916	.9987
22	μ Virginis	5	+43	—26	4 21.2	+ 7 1 43	+0.1627	.5433	— .1766	— 8.9670	.9979
22	94 Virginis	6	+42	—26	21 1.2	— 0 49 47	+0.1681	.5426	— .1663	— 9.1572	.9955
22	95 Virginis	6	+71	— 3	21 13.7	— 0 37 42	+0.5845	.5437	— .1662	— 9.1766	.9950
23	α Virginis	4½	+81	+35	0 12.5	+ 2 15 31	+1.1397	.5440	— .1640	— 9.2246	.9938
23	ϵ Libræ	6	+22	—44	20 17.7	— 2 17 18	—0.1501	.5458	— .1461	— 9.2942	.9914
23	ϵ Libræ	6	—17	—90	21 27.2	— 1 10 1	—0.8398	.5459	— .1447	— 9.2755	.9921
27	B. A. C. 6060	6½	+32	—27	10 43.9	+ 9 22 8	+0.1325	.5466	— .0251	— 9.5076	.9763
28	B. A. C. 6267	6	—48	—90	2 0.0	+ 0 8 38	—1.6610	.5455	— .0010	— 9.4871	.9725
28	B. A. C. 6267	6	+14	—37	3 2.8	+ 1 9 22	—0.0303	.5494	+0.0067	— 9.5083	.9762
23	B. A. C. 6292	6	+25	—25	3 35.3	+ 1 40 55	+0.1708	.5493	+0.0018	— 9.5123	.9757
24	B. A. C. 6213	6½	—14	—73	3 38.3	+ 1 43 48	—0.5372	.5493	+0.0018	— 9.4980	.9773
28	B. A. C. 6214	6	— 6	—60	3 39.1	+ 1 44 30	—0.3816	.5493	+0.0018	— 9.5012	.9770
23	B. A. C. 6536	6	+71	+28	21 17.2	— 5 11 15	+1.0116	.5466	+0.0217	— 9.5213	.9744
29	δ Sagittarii	5	+71	+13	1 48.5	— 0 48 40	+0.8198	.5460	+0.0369	— 9.5166	.9752
29	ϵ Sagittarii	4	+ 2	—55	3 47.3	+ 1 6 24	—0.3164	.5455	+0.0400	— 9.4921	.9780
29	ϵ Sagittarii	5½	+30	—24	3 51.2	+ 1 10 10	+0.1937	.5455	+0.0401	— 9.5126	.9768
29	B. A. C. 6658	6	+44	—12	6 52.7	+ 4 5 54	+0.4033	.5449	+0.0447	— 9.5042	.9766
30	B. A. C. 7063	6	—37	—90	13 18.7	+ 9 34 37	—1.0275	.5391	+0.0885	— 9.4267	.9839
30	B. A. C. 7097	6	+73	+15	15 58.5	—11 50 33	+0.8596	.5380	+0.0921	— 9.4653	.9866
30	τ Capricor.	5	— 7	—76	16 54.5	—10 56 12	—0.5792	.5378	+0.0933	— 9.4266	.9837
30	τ Capricor.	5	—14	—90	17 52.2	—10 0 19	—0.6949	.5374	+0.0946	— 9.4246	.9841
30	B. A. C. 7145	6½	+70	+ 3	18 28.8	— 9 24 50	+0.6669	.5373	+0.0955	— 9.4557	.9815
Dec. 1	9 Aquarii	6	—41	—90	4 48.0	+ 0 35 17	—1.1036	.5353	+0.1084	— 9.3850	.9868
1	18 Aquarii	6	+ 5	—63	16 22.9	+11 48 58	—0.4312	.5332	+0.1219	— 9.3663	.9879
1	B. A. C. 7487	6½	+76	+17	21 27.9	— 7 15 16	+0.8937	.5324	+0.1277	— 9.3857	.9868
2	λ Capricor.	5½	— 3	—77	3 41.8	— 1 12 43	—0.5944	.5316	+0.1342	— 9.3169	.9904
2	B. A. C. 7620	6	—54	—90	7 17.9	+ 2 16 49	—1.2540	.5313	+0.1377	— 9.2779	.9920
2	ϵ Aquarii	6	+67	— 4	15 52.8	+10 36 14	+0.5555	.5304	+0.1459	— 9.2785	.9912
2	B. A. C. 7774	6	—21	—90	19 8.3	—10 14 8	—0.9051	.5304	+0.1488	— 9.2264	.9937
3	67 Aquarii	6	—30	—90	8 33.8	+ 2 47 9	—1.0580	.5300	+0.1599	— 9.1244	.9961
3	λ Aquarii	4	+57	—13	13 19.6	+ 7 24 21	+0.3966	.5303	+0.1632	— 9.1585	.9954
3	78 Aquarii	6	+42	—27	14 19.7	+ 8 22 35	+0.1508	.5304	+0.1640	— 9.1384	.9958
3	81 Aquarii	6	+71	— 3	17 47.8	+11 44 25	+0.5750	.5306	+0.1664	— 9.1309	.9960
3	82 Aquarii	6	+41	—27	18 22.8	—11 41 35	+0.1446	.5308	+0.1670	— 9.1629	.9965
4	ϕ Aquarii	4½	+73	— 3	0 21.2	— 5 54 3	+0.5868	.5311	+0.1703	— 9.0708	.9970
4	96 Aquarii	5½	+36	—33	2 54.9	— 3 25 1	+0.0367	.5316	+0.1719	— 9.0079	.9977
4	B. A. C. 8134	6½	+28	—40	3 55.5	— 2 26 13	—0.0658	.5317	+0.1725	— 8.9732	.9981
4	20 Piscium	6	+36	—33	17 17.8	+10 31 37	+0.0354	.5343	+0.1787	— 8.7852	.9992
4	24 Piscium	6½	+86	+16	19 47.4	—11 3 17	+0.9016	.5351	+0.1798	— 8.8313	.9990
5	B. A. C. 8365	6½	—12	—90	1 50.2	— 5 11 42	—0.8348	.5365	+0.1817	— 8.3343	9.9999
5	10 Ceti	6	+79	0	12 27.8	+ 5 6 7	+0.6276	.5403	+0.1841	— 8.1351	0.0000
6	77 Pisc. <i>pr.</i>	7	—33	—86	7 21.7	— 0 36 1	—1.1223	.5485	+0.1843	— 8.8651	0.0088
6	f Piscium	6	+90	+49	13 2.3	+ 4 53 28	+1.2618	.5514	+0.1833	+8.7067	.9994
6	B. A. C. 408	6½	+68	— 6	15 20.1	+ 7 6 50	+0.5076	0.5526	+0.1827	+8.8486	9.9989

ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
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Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		<i>H</i>	<i>I</i>	<i>p'</i>	<i>q'</i>	Log sin <i>D</i>	Log cos <i>D</i>
Dec. 6	μ Piscium	4½	+17	-54	18 46.9	+10 26 49	-0.3322	0.5540	+1.1818	+8.9785	9.9980
7	ν Piscium	4½	+20	+52	0 0.5	-8 30 3	+1.2767	.5580	+1.799	+8.1242	.9985
7	64 Ceti	6½	+62	-9	13 32.1	+4 33 58	+0.4348	.5668	+1.724	+9.1408	.9958
7	ξ Ceti	4½	+51	-17	14 15.5	+5 15 47	+0.2777	.5669	+1.720	+9.1555	.9955
7	B.A.C. 723	6½	-24	-80	18 45.8	+9 36 44	-1.0042	.5700	+1.687	+9.2416	.9930
7	B.A.C. 741	6½	+49	-19	19 29.1	+10 9 49	+0.2330	.5703	+1.683	+9.1998	.9945
7	ϵ Arietis	5½	-2	-77	19 27.7	+10 17 12	-0.6584	.5708	+1.681	+9.2401	.9933
7	B.A.C. 755	6	+9	-61	20 18.9	+11 6 36	-0.4712	.5709	+1.676	+9.2382	.9934
8	B.A.C. 830	6	+63	-7	3 9.7	-6 17 10	+0.4431	.5758	+1.616	+9.2472	.9931
8	38 Arietis	5	-35	-78	4 11.8	-5 17 23	-1.1251	.5766	+1.646	+9.3138	.9906
8	μ Ceti	4	+90	+51	4 12.8	-5 16 24	+1.2425	.5766	+1.605	+9.2200	.9939
8	B.A.C. 987	6½	+32	-32	15 24.9	+5 31 18	-0.0498	.5848	+1.482	+9.3368	.9895
8	γ Tauri	4	+90	+45	23 31.1	-10 40 41	+1.1714	.5906	+1.376	+9.3347	.9896
9	Wei. III. 1086	8½	+90	+13	12 59.6	+2 16 49	+0.7109	.5996	+1.173	+9.4033	.9856
9	Lal. 7702	9½	-44	-73	15 0.2	+4 12 45	-1.1948	.6009	+1.139	+9.4612	.9810
9	Wei. IV. 24	9	+90	+18	15 33.9	+4 45 7	+0.7793	.6014	+1.127	+9.4098	.9852
9	Lal. 7753	7½	+39	-21	15 38.5	+4 49 34	+0.0818	.6014	+1.127	+9.426	.9837
9	B.A.C. 1231	7	+1	-66	15 41.1	+4 51 58	-0.6100	.6015	+1.126	+9.4482	.9822
9	Rumk. 1103	7	+61	-3	15 44.8	+4 55 37	+0.4103	.6015	+1.125	+9.4208	.9844
9	Rumk. 1108	9	+90	+40	16 10.2	+5 19 59	+1.1426	.6017	+1.118	+9.4012	.9858
9	Rumk. 1123	8½	+90	+56	16 56.1	+6 4 5	+1.2627	.6022	+1.104	+9.4002	.9858
9	48 Tauri	6	+90	+15	17 34.2	+6 40 40	+0.8249	.6026	+1.094	+9.4148	.9848
9	Rumk. 1136	6	+38	-22	17 58.4	+7 3 54	+0.0572	.6028	+1.067	+9.4372	.9831
9	γ Tauri	4	+90	+17	19 9.2	+8 11 57	+0.7586	.6034	+1.062	+9.4215	.9843
9	55 Tauri	7	+28	-32	19 11.0	+8 13 43	-0.1275	.6035	+1.062	+9.4456	.9824
9	Rumk. 1163	8	+15	-45	19 49.4	+8 50 34	-0.3450	.6040	+1.053	+9.4530	.9818
9	δ Tauri	4	-27	-73	20 21.2	+9 21 5	-1.0238	.6043	+1.044	+9.4716	.9801
9	63 Tauri	6	+21	-30	20 33.5	+9 34 55	+0.2457	.6045	+1.039	+9.4525	.9818
9	B.A.C. 1351	6½	+30	-30	20 34.9	+9 34 17	-0.0955	.6045	+1.038	+9.4486	.9821
9	δ Tauri	6	-17	-73	20 48.7	+9 47 29	-0.8819	.6046	+1.035	+9.4692	.9803
9	Lal. 8249	7½	+6	-57	20 55.4	+9 53 55	-0.5100	.6046	+1.033	+9.4602	.9811
9	Lal. 8256	8	+17	-43	20 57.8	+9 56 15	-0.3134	.6047	+1.032	+9.4553	.9816
9	70 Tauri	7	+87	+12	21 26.5	+10 23 50	+0.6699	.6049	+1.024	+9.4305	.9836
9	Lal. 8311	8	+90	+42	21 37.9	+10 34 46	+1.0953	.6050	+1.020	+9.4192	.9845
9	Rumk. 1188	6½	+90	+43	21 38.1	+10 34 55	+1.1003	.6050	+1.020	+9.4192	.9845
9	71 Tauri	6	+90	+36	21 43.9	+10 40 31	+1.0172	.6050	+1.019	+9.4218	.9843
9	Rumk. 1198	6	+90	+46	22 1.6	+10 57 32	+1.1405	.6051	+1.013	+9.4191	.9845
9	75 Tauri	6	+58	-5	22 32.7	+11 27 23	+0.3595	.6054	+1.002	+9.4419	.9827
9	δ Tauri	4½	+90	+18	22 35.9	+11 30 27	+0.7563	.6054	+1.002	+9.4314	.9836
9	68 Tauri	4½	+90	+24	22 38.1	+11 32 36	+0.8507	.6054	+1.001	+9.4285	.9837
9	Rumk. 1212	6	-10	-73	22 58.0	+11 45 55	-0.7874	.6055	+0.998	+9.4721	.9800
9	Rumk. 1215	7	-37	-73	22 55.9	+11 49 41	-1.1259	.6055	+0.997	+9.4805	.9792
9	80 Tauri pr.	6	+90	+46	23 13.2	-11 53 42	+1.1347	.6057	+0.992	+9.4226	.9842
9	B.A.C. 1391	5	+78	+9	23 22.3	-11 45 1	+0.5977	.6158	+0.989	+9.4377	.9830
9	81 Tauri	5½	+90	+43	23 25.0	-11 48 21	+1.0990	.6058	+0.989	+9.4242	.9841
9	B.A.C. 1394	7	+84	+11	23 27.6	-11 30 54	+0.6458	.6058	+0.987	+9.4367	.9831
9	Rumk. 1227	7	+90	+35	23 41.7	-11 26 24	+1.0018	.6061	+0.982	+9.4276	.9838
9	85 Tauri	6	+90	+33	23 53.3	-11 15 14	+0.9838	.6061	+0.979	+9.4286	.9838
10	B.A.C. 1406	7	+76	+8	0 34.6	-10 35 35	+0.5778	.6065	+0.966	+9.4414	.9827
10	Lal. 8599	9	-11	-73	0 57.5	-10 13 34	-0.8013	.6067	+0.959	+9.4775	.9795
10	Lal. 8610	8	+32	-26	1 5.1	-10 6 17	-0.0466	.6068	+0.956	+9.4590	.9812
10	Lal. 8613	8	+21	-38	1 6.3	-10 5 7	-0.2449	.6163	+0.956	+9.4640	.9808
10	α Tauri	1	+66	+2	1 27.7	-9 44 37	+0.4660	.6070	+0.949	+9.4466	.9823
10	89 Tauri	7	+90	+37	2 20.6	-8 53 50	+1.0126	.6075	+0.922	+9.4341	.9833
10	α Tauri	5½	+90	+69	2 44.3	-8 34 6	+1.2926	.6079	+0.924	+9.4276	.9838

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			North- ern.	South- ern.		H	Y	p'	q'	Log sin D	Log cos D
Dec. 10	α^8 Tauri	5½	+90	+51	2 46.7	— 8 28 42	+1.1706	0.6079	+.0923	+9.4310	9.9836
10	Ramk. 1243	8	+80	+10	3 12.7	— 8 3 50	+0.6164	.6079	+.0917	+9.4469	.9823
10	Ramk. 1246	7	+22	—37	3 38.0	— 7 39 28	—0.2357	.6084	+.0906	+9.4697	.9802
10	Ramk. 1283	7	+90	+19	6 24.5	— 4 59 39	+0.7527	.6098	+.0850	+9.4508	.9820
10	Ramk. 1299	7½	+24	—34	7 37.0	— 3 50 6	—0.1957	.6105	+.0827	+9.4772	.9795
10	Ramk. 1302	7	—49	—72	7 40.6	— 3 46 42	—1.2374	.6105	+.0826	+9.5020	.9769
10	B.A.C. 1526	6	+63	+5	9 45.4	— 1 46 53	+0.4901	.6114	+.0785	+9.4645	.9807
10	111 Tauri	6	+90	+28	20 4.2	+ 8 6 34	+0.8764	.6156	+.0570	+9.4722	.9800
10	115 Tauri	5½	+58	—1	21 6.7	+ 9 6 33	+0.3565	.6157	+.0546	+9.4663	.9786
10	117 Tauri	6	+90	+46	21 27.2	+ 9 26 12	+1.0822	.6159	+.0534	+9.4650	.9803
10	119 Tauri	5½	+25	—30	23 0.6	+10 55 46	—0.1806	.6163	+.0503	+9.5013	.9770
10	120 Tauri	6	+29	—26	23 30.6	+11 24 27	—0.1069	.6166	+.0489	+9.5001	.9771
10	130 Tauri	6	+90	+32	4 46.6	— 7 32 34	+0.8742	.6179	+.0372	+9.4823	.9790
11	χ^2 Orionis	6	—30	—71	7 33.7	— 4 52 29	—1.0390	.6186	+.0308	+9.5281	.9737
11	B.A.C. 1930	6½	+90	+47	10 36.9	— 1 56 51	+1.0656	.6189	+.0238	+9.4820	.9790
11	χ^2 Orionis	5	—20	—71	10 45.6	— 1 48 29	—0.9198	.6189	+.0236	+9.5275	.9738
11	63 Orionis	6	—25	—70	13 58.6	+ 1 16 26	—0.9806	.6192	+.0163	+9.5301	.9735
11	71 Orionis	5½	+15	—38	15 3.2	+ 2 18 18	—0.3569	.6194	+.0138	+9.5169	.9751
12	26 Geminor.	5½	+90	+47	1 24.7	—11 46 3	+1.0600	.6193	—0.0106	+9.4845	.9788
12	B.A.C. 2432	6½	+20	—25	16 43.7	+ 2 54 46	—0.1059	.6162	—0.454	+9.5020	.9769
12	γ Geminor.	6	+42	—14	23 58.3	+ 9 53 54	+0.1108	.6143	—0.0589	+9.4893	.9783
12	γ Geminor.	5½	—18	—71	1 30.0	+11 19 24	—0.8892	.6129	—0.647	+9.5088	.9761
13	3 Cancri	6	+27	—30	7 9.4	— 7 15 1	—0.1432	.6104	—0.0761	+9.4821	.9790
13	5 Cancri	6	+89	+15	7 26.9	— 6 58 14	+0.6737	.6102	—0.770	+9.4613	.9810
13	B.A.C. 2731	6½	+25	—32	10 43.9	— 3 49 11	—0.1663	.6087	—0.836	+9.4757	.9716
13	ϵ^1 Cancri	4½	—16	—72	11 34.2	— 3 0 57	—0.8712	.6081	—0.853	+9.4909	.9781
13	ϵ^2 Cancri	7½	—16	—72	11 34.2	— 3 0 52	—0.8686	.6081	—0.853	+9.4909	.9781
13	δ^2 Cancri	6	—11	—73	16 54.8	+ 2 7 1	—0.7973	.6053	—0.954	+9.4775	.9795
14	54 Cancri	6½	+23	—38	2 54.8	+11 43 15	—0.2194	.5994	—1.124	+9.4360	.9832
14	δ^1 Cancri	6	+7	—57	5 24.0	— 9 53 27	—0.4562	.5977	—1.170	+9.4357	.9832
14	α^5 Cancri	6	—9	—74	5 31.8	— 9 45 53	—0.7696	.5976	—1.180	+9.4426	.9826
14	π^1 Cancri	6½	—21	—75	11 31.6	— 3 59 56	—0.9502	.5939	—1.275	+9.4276	.9837
14	π^2 Cancri	6	—30	—75	12 41.7	— 2 52 34	—1.0617	.5931	—1.282	+9.4265	.9839
15	18 Leonis	6	+48	—17	1 38.2	+ 9 34 44	+0.2176	.5844	—1.470	+9.3324	.9897
15	B.A.C. 3345	6	+70	—1	2 35.6	+10 31 9	+0.5247	.5844	—1.475	+9.3152	.9903
15	γ Leonis	5	—42	—77	6 37.6	— 9 36 52	—1.1912	.5810	—1.530	+9.3544	.9886
15	A Leonis	5	+78	+3	10 47.3	— 5 36 15	+0.6101	.5782	—1.575	+9.2664	.9825
15	B.A.C. 3538	6½	+82	+5	16 58.8	+ 0 21 52	+0.6446	.5741	—1.635	+9.2233	.9838
15	44 Leonis	6	+77	+2	18 17.5	+ 1 37 46	+0.6046	.5736	—1.647	+9.2155	.9840
15	B.A.C. 3562	6½	+76	+1	18 26.6	+ 1 46 30	+0.5910	.5732	—1.650	+9.2150	.9841
15	45 Leonis	6	+4	—68	19 19.7	+ 2 37 46	—0.5501	.5728	—1.656	+9.2579	.9827
15	ϵ Leonis	4	+8	—62	21 35.6	+ 4 48 50	—0.4818	.5712	—1.677	+9.2350	.9834
15	49 Leonis pr.	6	+37	—30	22 35.7	+ 5 46 52	+0.0303	.5707	—1.685	+9.2091	.9842
16	ϵ Leonis	5	+77	0	10 2.2	— 7 10 35	+0.6072	.5640	—1.765	+9.0740	.9869
16	χ Leonis	5	—24	—82	11 58.4	— 5 18 20	—1.0032	.5627	—1.776	+9.1462	.9957
16	α Leonis	4	—23	—84	19 17.8	— 8 13 50	—0.9929	.5590	—1.812	+9.0703	.9970
16	89 Leonis	6	+90	+20	1 24.3	+ 7 40 21	+0.9389	.5558	—1.836	+8.8206	.9990
17	β Virginis	3½	+90	+15	8 56.6	— 9 2 20	+0.8788	.5526	—1.855	+8.6412	.9996
17	10 Virginis	6	—18	—88	17 56.4	+ 0 20 7	—0.9324	.5490	—1.866	+8.6633	.9995
17	13 Virginis	6	+90	+29	22 12.5	+ 3 47 40	+1.0780	.5475	—1.867	—6.9574	0.0000
17	γ Virginis	3½	+90	+13	22 48.2	+ 4 22 12	+0.8416	.5474	—1.866	+7.0765	0.0000
18	γ Virginis pr.	2½	+20	—51	9 16.1	— 9 30 1	—0.2759	.5443	—1.856	—8.1016	0.0000
18	B.A.C. 4277	6	+18	—54	10 10.3	— 8 37 31	—0.3158	.5441	—1.854	—8.1690	0.0000
18	38 Virginis	6	+88	+17	14 48.4	— 4 8 13	+0.9185	.5429	—1.843	—8.6340	.9995
18	δ Virginis	6	+78	—1	17 55.6	— 1 6 55	+0.6230	.5425	—1.835	—8.7325	.9994

**ELEMENTS FOR FACILITATING THE CALCULATION OF OCCULTATIONS OF
PLANETS AND STARS BY THE MOON, FOR THE YEAR 1867.**

Date.	Star's Name.	Magnitude.	Limiting Parallels.		Washington Mean Time of δ .	At Washington Mean Time of Conjunction.					
			North-ern.	South-ern.		H	Y	p'	q'	Log sin D	Log cos D
Dec. 18	46 Virginis	6½	+39	-31	18 23.1	- 0 40 18	+0.0737	0.5424	-.1833	-8.6658	9.9995
18	43 Virginis	6	+40	-30	19 59.4	+ 0 52 57	+0.0907	.5421	-.1829	-8.7114	.9994
19	65 Virginis	6	+20	-51	5 26.4	+10 2 8	-0.2653	.5408	-.1791	-8.8678	.9988
19	66 Virginis	6	+23	-42	6 1.9	+10 36 30	-0.1164	.5406	-.1789	-8.8918	.9987
19	1 ^a Virginis	5	+59	-13	9 39.9	- 9 52 16	+0.0664	.5403	-.1771	-8.9871	.9979
19	80 Virginis	6	-11	-90	11 24.3	- 8 11 7	-0.8056	.5400	-.1762	-8.9154	.9985
20	94 Virginis	6	+56	-14	2 27.8	+ 6 24 11	+0.3833	.5396	-.1668	-9.1572	.9955
20	95 Virginis	6	+82	+10	2 40.4	+ 6 36 22	+0.8000	.5394	-.1667	-9.1787	.9950
21	21 Libræ	6	+32	-34	2 0.2	+ 5 12 35	+0.0169	.5407	-.1469	-9.2942	.9914
21	2 ^a Libræ	6	- 7	-87	3 10.6	+ 6 20 45	-0.6775	.5410	-.1457	-9.2756	.9921
21	13 Libræ pr.	6½	-38	-90	4 3.9	+ 7 12 4	-1.1166	.5411	-.1447	-9.2650	.9925
21	γ Libræ	4½	+62	- 5	22 0.2	+ 0 34 54	+0.5381	.5434	-.1251	-9.3940	.9962
22	η Libræ	6	+75	+26	2 8.5	+ 4 35 19	+1.0170	.5440	-.1201	-9.4199	.9844
22	48 Libræ	4½	-59	-90	9 0.3	+11 14 9	-1.2569	.5449	-.1115	-9.3804	.9871
22	49 Libræ	5½	+74	+32	10 1.9	-11 46 16	+1.0852	.5451	-.1101	-9.4440	.9885
23	φ Ophiuchi	5	+13	-47	0 50.0	+ 2 33 37	-0.1979	.5473	-.0900	-9.4487	.9821
23	24 Scorpii	5	+67	+ 2	5 48.5	+ 7 22 36	+0.6492	.5478	-.0828	-9.4777	.9795
23	B.A.C. 5695	6	-27	-90	12 44.9	- 9 54 16	-0.8714	.5485	-.0725	-9.4556	.9815
23	20 Ophiuchi	6	+72	+54	15 29.2	- 7 15 16	+1.2442	.5489	-.0683	-9.5016	.9765
23	B.A.C. 5771	6½	+ 3	-57	18 34.3	- 4 16 5	-0.3415	.5490	-.0636	-9.4765	.9796
27	B.A.C. 7063	6	-57	-90	19 46.2	- 6 10 22	-1.2286	.5408	+0.0857	-9.4267	.9839
27	B.A.C. 7097	6	+69	+ 2	22 25.7	- 3 35 45	+0.6574	.5398	+0.0918	-9.4654	.9816
27	τ ¹ Capricor	6	-19	-90	27 21.6	- 2 41 38	-0.7867	.5395	+0.0918	-9.4287	.9837
28	τ ² Capricor	5	-27	-90	0 19.1	- 1 45 52	-0.9047	.5395	+0.0930	-9.4246	.9841
28	B.A.C. 7145	6½	+53	- 9	0 55.7	- 1 10 26	+0.4594	.5393	+0.0940	-9.4557	.9815
28	18 Aquarii	6	-10	-88	22 49.2	- 3 57 15	-0.6784	.5343	+0.1208	-9.3663	.9879
29	B.A.C. 7487	6½	+72	+ 1	3 54.8	+ 0 50 6	+0.6455	.5331	+0.1264	-9.3857	.9868
29	1 Capricor.	5½	-20	-90	10 0.8	+ 7 2 48	-0.8622	.5320	+0.1329	-9.3169	.9904
29	α ¹ Aquarii	6	+47	-19	22 24.7	- 5 4 21	+0.2835	.5297	+0.1448	-9.2985	.9912
29	α ² Aquarii	6	+78	+33	22 27.3	- 5 1 50	+1.1090	.5297	+0.1449	-9.3254	.9900
30	B.A.C. 7774	6	-44	-90	1 2.0	- 2 33 4	-1.1901	.5294	+0.1477	-9.2265	.9937
30	1 Aquarii	4	+39	-29	20 4.7	- 8 3 4	+0.1055	.5275	+0.1617	-9.1585	.9954
30	78 Aquarii	6	+25	-43	21 5.5	- 7 4 0	-0.1431	.5274	+0.1624	-9.1384	.9958
31	81 Aquarii	6	+50	-19	0 36.6	- 3 39 11	+0.2831	.5272	+0.1648	-9.1309	.9960
31	82 Aquarii	6	+25	-44	1 12.2	- 3 4 37	-0.1517	.5272	+0.1650	-9.1029	.9965
31	1 ^a Aquarii	6	+82	+55	2 32.3	- 1 46 53	+1.2981	.5271	+0.1660	-9.1649	.9953
31	φ Aquarii	4½	+51	-19	7 16.5	+ 2 48 49	+0.2921	.5271	+0.1686	-9.0709	.9970
31	96 Aquarii	5½	+19	-51	9 52.9	+ 5 20 35	-0.2644	.5272	+0.1701	-9.0080	.9977
31	B.A.C. 8134	6½	+ 2	-75	10 54.6	+ 6 20 29	-0.5804	0.5272	+0.1706	-8.9732	9.9961

Notes. — B. A. C., British Association Catalogue.

Lal., Lalande's *Histoire Céleste Française*. Bailey's Ed.

Runk., Runkler's Catalogue.

Wels., Welsch's *Positiones Medias Stellarum Fixarum*.

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1867.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
			h m	h m	°		h m	h m	°		h m
Jan. 12	77 Piscium <i>pr</i>	7	6 9	10 40	314	6	7 1	11 33	80	131	0 52
16	B.A.C. 1526	6	7 43	11 58	243	294	8 42	12 58	121	175	1 0
17	130 Tauri	6	0 54	5 6	258	203	1 51	6 4	119	64	0 58
17	B.A.C. 1930	6½	9 26	13 38	188	242	9 41	13 53	162	216	0 15
18	4 Geminor †	3½	14 17	18 24	218	266	14 52	18 58	124	169	0 35
19	1 Cancri	6	2 51	6 55	247	193	3 49	7 53	106	52	0 58
28	49 Libræ	5½	13 17	16 45	251	206	14 44	18 11	71	38	1 27
31	B.A.C. 6292	6	14 12	17 27	263	219	15 28	18 43	86	51	1 16
Feb. 1	q ¹ Sagittarii †	4	14 15	17 26	320	272	14 52	18 8	38	352	0 42
1	q ² Sagittarii	5½	14 42	17 53	179	132	Star 0'·8 south of C's limb.				
12	70 Tauri	7	2 43	5 13	195	157	Star 0'·3 south of C's limb.				
12	Runk. 1203		3 51	6 21	266	252	5 10	7 40	117	141	1 19
12	75 Tauri	6	3 55	6 24	277	264	5 17	7 47	106	132	1 22
12	Runk. 1210		4 30	7 0	219	224	5 9	7 39	162	185	0 39
12	B.A.C. 1391	5	5 39	8 9	201	233	5 56	8 26	176	214	0 17
12	Runk. 1232		6 21	8 50	294	337	7 33	10 2	78	130	1 12
12	B.A.C. 1406	7	7 13	9 42	223	272	7 57	10 26	147	199	0 44
12	Runk. 1238	10	7 27	9 56	265	316	8 37	11 7	103	157	1 10
12	α Tauri	1	8 13	10 43	262	315	9 17	11 46	104	159	1 3
12	Runk. 1241		10 4	12 33	256	310	10 57	13 26	107	158	0 53
12	Runk. 1243	8	10 17	12 46	254	307	11 8	13 37	109	160	0 52
12	Runk. 1247 †		10 45	13 14	295	346	11 33	14 2	69	107	0 48
12	Runk. 1254 †		10 59	13 28	289	340	11 48	14 17	75	123	0 49
14	26 Geminor.	5½	10 52	13 13	207	351	11 41	14 2	46	100	0 49
17	ξ Leonis	6	5 45	7 54	276	226	6 52	9 2	55	10	1 7
18	48 Leonis	6	10 29	12 34	306	307	11 8	13 13	3	18	0 38
19	τ Leonis	5	10 42	12 43	333	320	Star 1'·2 north of C's limb.				
21	θ Virginis, tr.	4½	10 49	12 43	298	268	11 37	13 30	8	346	0 47
24	γ Libræ	6	16 6	17 47	284	292	17 26	19 7	47	71	1 21
Mar. 11	70 Tauri *	7	11 20	12 3	255	304	12 7	12 49	111	155	0 47
12	111 Tauri	6	11 20	11 59	275	327	12 12	12 51	82	131	0 52
15	20 Cancri †	6	14 46	15 12	266	317	15 36	16 2	67	115	0 50
April 8	B.A.C. 1526	6	7 47	6 40	279	330	8 54	7 47	78	132	1 7
9	B.A.C. 1930	6½	10 11	9 0	247	301	11 9	9 58	103	157	0 58
11	1 Cancri	6	7 12	5 53	237	219	8 30	7 11	199	219	1 18
18	06 Virginis	6½	12 51	11 4	231	213	14 16	12 29	78	82	1 25
20	γ Libræ	6	10 36	8 41	229	181	11 37	9 42	92	48	1 1
21	24 Scorpii	5	15 28	13 28	298	283	16 39	14 39	37	38	1 11
May 1	Mercur †		18 42	16 2	279	228	19 41	17 2	119	68	1 0
5	α Tauri	1	9 53	6 59	263	317	10 46	7 53	108	153	0 54
5	Runk. 1241 †		11 25	8 31	259	308	12 12	9 18	105	151	0 47
5	Runk. 1243 *	8	11 36	8 42	257	305	12 22	9 28	108	152	0 46
7	26 Geminor.	5½	10 36	7 35	259	314	11 37	8 36	84	138	1 1
11	48 Leonis	6	13 2	9 45	294	336	13 51	10 33	19	66	0 48
June 9	B.A.C. 4043	6½	11 59	6 47	298	300	12 46	7 34	6	22	0 47
18	B.A.C. 6658	6	15 42	9 54	263	223	17 3	11 15	98	69	1 21
26	64 Ceti	6½	20 8	13 48	275	223	21 2	14 43	125	74	0 55
26	ξ Ceti	4½	20 58	14 37	302	251	21 57	15 37	101	49	1 0
July 9	α Virginis	4½	14 41	7 32	236	245	16 8	8 58	78	106	1 26
11	49 Libræ *	5½	21 33	14 14	214	264	22 11	14 52	127	188	0 38
12	24 Scorpii	5	15 51	8 29	292	282	17 8	9 46	43	51	1 18
14	B.A.C. 6292 †	6	22 43	15 12	322	7	23 32	16 1	55	104	0 49
15	q ² Sagittarii	5½	22 49	15 14	294	334	23 58	16 23	91	139	1 9

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT
WASHINGTON, D. C., DURING THE YEAR 1867.

Date.	Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.
			Washington		Angle from		Washington		Angle from		
			Sidereal Time.	Mean Time.	North Point.	Ver- tex.	Sidereal Time.	Mean Time.	North Point.	Ver- tex.	
			h m	h m	°		h m	h m	°		h m
July 20	96 Aquarii	5½	18 26	10 32	6	317	18 40	10 46	30	342	0 14
24	B.A.C. 830 *	6	19 24	11 14	342	284	19 53	11 43	52	2	0 29
26	Rumk. 1233	7	23 50	15 32	281	227	0 52	16 33	108	55	1 1
27	130 Tauri	6	22 47	14 25	291	242	23 36	15 14	26	34	0 50
Aug. 4	δ Virginis, tr. †	4½	18 27	9 35	203	254	19 6	10 14	124	175	0 39
16	81 Aquarii *	6	16 26	6 46	236	185	17 4	7 24	153	102	0 39
16	82 Aquarii †	6	17 15	7 35	341	280	17 50	8 10	50	1	0 35
22	γ Tauri	4	20 55	10 50	318	268	21 39	11 35	70	18	0 44
22	70 Tauri	7	21 22	13 17	322	268	0 11	14 6	70	16	0 49
22	Lul. 8311	8	23 44	13 40	199	146	23 48	13 44	152	139	0 4
22	Rumk. 1188	6½	23 47	13 42	196	142	Star 0'1	north of	♄'s limb.		
22	71 Tauri	6	23 34	13 30	230	185	0 18	14 13	153	100	0 43
22	Rumk. 1200		0 29	14 24	196	143	Star 2'0	south of	♄'s limb.		
22	δ¹ Tauri	4½	0 35	14 31	225	232	1 45	15 40	108	60	1 10
22	δ² Tauri	4½	0 37	14 32	264	211	1 42	15 37	129	80	1 5
22	Rumk. 1210		1 0	14 56	321	269	1 59	15 54	72	25	0 58
22	B.A.C. 1391	5	1 44	15 39	305	256	2 56	16 51	88	52	1 12
22	81 Tauri	5½	1 54	15 49	223	177	2 29	16 24	169	128	0 35
22	B.A.C. 1394	7	1 48	15 43	213	245	3 4	16 59	99	66	1 16
22	Rumk. 1227	7	2 33	16 28	196	155	Star 3'4	south of	♄'s limb.		
22	85 Tauri	6	2 51	16 46	105	158	Star 3'2	south of	♄'s limb.		
23	111 Tauri	6	23 11	13 2	297	245	0 4	13 56	85	31	0 53
23	117 Tauri	6	0 49	14 40	227	172	1 26	15 17	156	102	0 37
Sept. 8	B.A.C. 6658	6	17 32	6 21	259	235	19 1	7 51	111	107	1 30
12	λ Aquarii	4	22 4	10 37	262	251	23 14	11 47	152	160	1 10
12	78 Aquarii	6	23 38	12 11	288	301	0 59	13 32	125	156	1 21
12	82 Aquarii *	6	4 52	17 25	213	264	5 5	17 38	186	137	0 13
13	20 Piscium	6	2 24	14 53	293	302	3 36	16 5	116	143	1 12
14	10 Ceti	6	18 43	7 9	260	218	19 41	8 6	130	81	0 58
15	B.A.C. 408	6½	21 43	10 4	297	251	22 55	11 17	113	75	1 13
16	64 Ceti	6½	20 31	8 49	20	328	Star 0'1	north of	♄'s limb.		
16	B.A.C. 741	6½	3 51	16 7	307	338	5 6	17 22	94	138	1 15
18	Wei. III. 1085	8½	21 36	9 45	328	278	22 15	10 24	62	10	0 39
18	Wei. IV. 24	9	0 20	12 29	277	225	1 29	13 38	118	71	1 9
18	Rumk. 1103	7	1 24	13 33	18	329	Star 1'3	north of	♄'s limb.		
18	48 Tauri	6	3 30	15 39	223	206	4 9	16 18	167	167	0 39
18	γ Tauri	4	6 0	18 8	227	266	6 47	18 56	152	199	0 47
20	B.A.C. 1930 †	6½	22 22	10 24	275	229	23 12	11 13	98	48	0 49
29	96 Virginis *	6	19 49	7 16	346	37	Star 1'3	north of	♄'s limb.		
Oct. 2	24 Scorpii †	5	21 17	8 32	248	296	22 18	9 33	108	158	1 1
10	φ Aquarii	4½	17 55	4 39	256	206	18 51	5 35	139	92	0 56
10	96 Aquarii	5½	22 6	8 49	25	7	Star 0'0	north of	♄'s limb.		
15	Wei. III. 1085	8½	8 14	18 36	205	259	8 35	18 57	160	222	0 21
16	Rumk. 1233	7	23 42	10 1	284	230	0 43	11 2	105	52	1 1
16	B.A.C. 1526	6	4 20	14 38	287	272	5 41	15 59	93	117	1 21
17	130 Tauri	6	23 19	9 34	276	225	0 13	10 28	102	48	0 54
19	5 Cancri	6	6 8	16 14	283	242	7 24	17 30	69	45	1 16
Nov. 5	ε¹ Aquarii	6	22 47	7 48	258	269	23 55	8 55	152	178	1 8
6	81 Aquarii	6	1 0	9 56	206	236	Star 0'2	south of	♄'s limb.		
6	82 Aquarii	6	1 33	10 29	304	339	2 46	11 42	106	150	1 13
10	B.A.C. 830 †	6	8 44	17 24	252	304	9 29	18 9	131	180	0 46
12	48 Tauri †	6	20 39	5 12	274	228	21 26	6 0	113	63	0 48
12	γ Tauri	4	22 9	6 42	274	222	23 2	7 35	116	63	0 54

OCCULTATIONS OF PLANETS AND STARS BY THE MOON, VISIBLE AT WASHINGTON, D. C., DURING THE YEAR 1867.

Date.		Star's Name.	Magnitude.	IMMERSION.				EMERSION.				Duration of Occultation.	
				Washington		Angle from		Washington		Angle from			
				Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.		
Nov.	12	70 Tauri	7	h m	h m	260°	207°	h m	h m	134°	87°	h m	
	12	75 Tauri	6	2 19	10 51	305	261	1 45	10 17	134	87	1 1	
	12	81 Tauri	4½	2 44	11 17	196	158	3 30	12 3	87	63	1 12	
	12	B.A.C. 1391	5	3 30	12 2	240	215	Star 1' 3 south of	12 59	149	150	0 57	
	12	B.A.C. 1394	7	3 46	12 18	221	203	4 26	12 55	149	150	0 57	
								4 23	12 55	167	166	0 37	
	12	B.A.C. 1406	7	5 24	13 56	228	255	6 12	14 45	151	192	0 49	
	12	α Tauri	1	6 33	15 5	256	300	7 40	16 13	118	170	1 8	
	12	Rumk. 1243	8	8 55	17 27	232	286	9 40	18 12	135	189	0 45	
	13	111 Tauri	6	23 39	8 8	234	180	0 17	8 46	149	95	0 38	
	13	115 Tauri	5½	1 5	9 34	343	288	1 35	10 4	40	346	0 30	
	Dec.	20	γ Virginis	3½	7 56	15 56	214	165	8 52	16 53	101	57	0 57
		29	B.A.C. 5658	6	0 30	7 56	316	10	1 21	8 47	78	130	0 51
		5	10 Ceti *	6	6 34	13 36	219	270	6 53	13 55	177	228	0 19
		7	64 Ceti	6½	7 32	14 26	273	325	8 27	15 21	116	166	0 55
7		ζ¹ Ceti †	4½	8 22	15 16	310	1	9 10	16 4	77	125	0 47	
9		Wel. IV. 24	9	10 3	16 49	186	238	Star 2' 7 south of	17 29	83	132	0 52	
9		Rumk. 1103 †	7	9 52	16 37	288	339	10 43	17 29	83	132	0 52	
10		Rumk. 1283	7	21 59	4 42	277	227	22 49	5 32	109	57	0 51	
10		B.A.C. 1526	6	1 40	8 22	283	231	2 50	9 32	106	62	1 10	
15		A Leonis †	5	2 48	9 11	222	173	3 29	9 52	117	66	0 41	
15		B.A.C. 3538	6½	10 20	16 42	221	223	11 33	17 55	90	118	1 13	
15		44 Leonis	6	12 6	18 28	254	289	13 18	19 40	58	103	1 12	
15		B.A.C. 3562	6½	12 18	18 40	259	297	13 28	19 50	52	99	1 10	
18		ε Virginis	6	10 34	16 44	227	193	11 52	18 2	77	60	1 18	
31		φ Aquarii	4½	2 53	8 13	324	8	3 52	9 13	83	132	1 0	

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emergence below the horizon of Washington.

The Angles of Position, for the points of contact, are for direct vision, and are reckoned from the Moon's North Point and from its Vertex towards the West. For inverted images, add 180° to the angles given.

460 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

JANUARY, FEBRUARY.

The Satellites are not visible during the months of January and February, Jupiter being too near the Sun.

MARCH.

		d	h	m	s			d	h	m	s	
I.	Eclipse	Disapp.	1	15	29	25.5	I.	Shadow	Ingress	7	20	11
I.	Occult.	Reapp.	1	18	15		I.	Transit	Ingress	7	20	45
II.	Shadow	Ingress	1	18	55		I.	Shadow	Egress	7	22	31
II.	Transit	Ingress	1	19	52		I.	Transit	Egress	7	23	5
II.	Shadow	Egress	1	21	52		I.	Eclipse	Disapp.	8	17	23 25.1
II.	Transit	Egress	1	22	49		I.	Occult.	Reapp.	8	20	16
III.	Shadow	Ingress	2	2	33		II.	Shadow	Ingress	8	21	30
III.	Transit	Ingress	2	4	29		II.	Transit	Ingress	8	22	41
III.	Shadow	Egress	2	6	16		II.	Shadow	Egress	9	0	26
III.	Transit	Egress	2	8	12		II.	Transit	Egress	9	1	38
I.	Shadow	Ingress	2	12	45		III.	Shadow	Ingress	9	6	34
I.	Transit	Ingress	2	13	14		III.	Transit	Ingress	9	8	58
I.	Shadow	Egress	2	15	6		III.	Shadow	Egress	9	10	17
I.	Transit	Egress	2	15	35		III.	Transit	Egress	9	12	41
I.	Eclipse	Disapp.	3	9	57	57.7	I.	Shadow	Ingress	9	14	40
I.	Occult.	Reapp.	3	12	46		I.	Transit	Ingress	9	15	16
II.	Eclipse	Disapp.	3	13	51	18.9	I.	Shadow	Egress	9	17	0
II.	Occult.	Reapp.	3	17	47		I.	Transit	Egress	9	17	35
I.	Shadow	Ingress	4	7	14		I.	Eclipse	Disapp.	10	11	51 56.7
I.	Transit	Ingress	4	7	44		I.	Occult.	Reapp.	10	14	47
I.	Shadow	Egress	4	9	34		II.	Eclipse	Disapp.	10	16	28 24.1
I.	Transit	Egress	4	10	5		II.	Occult.	Reapp.	10	20	38
I.	Eclipse	Disapp.	5	4	26	26.3	I.	Shadow	Ingress	11	9	8
I.	Occult.	Reapp.	5	7	16		I.	Transit	Ingress	11	9	46
II.	Shadow	Ingress	5	8	12		I.	Shadow	Egress	11	11	29
II.	Transit	Ingress	5	9	17		I.	Transit	Egress	11	12	6
II.	Shadow	Egress	5	11	9		I.	Eclipse	Disapp.	12	6	20 24.5
II.	Transit	Egress	5	12	13		I.	Occult.	Reapp.	12	9	17
III.	Eclipse	Disapp.	5	16	26	8.8	II.	Shadow	Ingress	12	10	47
III.	Occult.	Reapp.	5	22	14		II.	Transit	Ingress	12	12	6
I.	Shadow	Ingress	6	1	43		II.	Shadow	Egress	12	13	43
I.	Transit	Ingress	6	2	15		II.	Transit	Egress	12	15	2
I.	Shadow	Egress	6	4	3		III.	Eclipse	Disapp.	12	20	26 6.3
I.	Transit	Egress	6	4	35		III.	Occult.	Reapp.	13	2	43
IV.	Shadow	Ingress	6	13	17		I.	Shadow	Ingress	13	3	37
IV.	Shadow	Egress	6	18	13		I.	Transit	Ingress	13	4	16
IV.	Transit	Ingress	6	18	27		I.	Shadow	Egress	13	5	58
I.	Eclipse	Disapp.	6	22	54	56.3	I.	Transit	Egress	13	6	36
IV.	Transit	Egress	6	23	22		I.	Eclipse	Disapp.	14	0	48 53.7
I.	Occult.	Reapp.	7	1	46		I.	Occult.	Reapp.	14	3	47
II.	Eclipse	Disapp.	7	3	9	23.7	II.	Eclipse	Disapp.	14	5	46 25.3
II.	Occult.	Reapp.	7	7	12		II.	Occult.	Reapp.	14	10	3

JUPITER'S SATELLITES, 1867. 461

WASHINGTON MEAN TIME.

MARCH.

		d	h	m	s			d	h	m	s
IV.	Eclipse	Disapp.	14	20	59	56.5	I.	Transit	Egress	22	3 8
I.	Shadow	Ingress	14	22	5		I.	Eclipse	Disapp.	22	21 11 15.3
I.	Transit	Ingress	14	22	47		I.	Occult.	Reapp.	23	0 17
I.	Shadow	Egress	15	0	26		II.	Shadow	Ingress	23	2 39
I.	Transit	Egress	15	1	7		II.	Transit	Ingress	23	4 18
IV.	Eclipse	Reapp.	15	1	44	0.7	II.	Shadow	Egress	23	5 35
IV.	Occult.	Disapp.	15	3	22		II.	Transit	Egress	23	7 14
IV.	Occult.	Reapp.	15	8	17		IV.	Shadow	Ingress	23	7 27
I.	Eclipse	Disapp.	15	19	17	21.7	IV.	Shadow	Egress	23	12 23
I.	Occult.	Reapp.	15	22	17		III.	Shadow	Ingress	23	14 34
II.	Shadow	Ingress	16	0	4		IV.	Transit	Ingress	23	15 5
II.	Transit	Ingress	16	1	30		III.	Transit	Ingress	23	17 53
II.	Shadow	Egress	16	3	1		III.	Shadow	Egress	23	18 17
II.	Transit	Egress	16	4	26		I.	Shadow	Ingress	23	18 28
III.	Shadow	Ingress	16	10	34		I.	Transit	Ingress	23	19 18
III.	Transit	Ingress	16	13	27		IV.	Transit	Egress	23	20 1
III.	Shadow	Egress	16	14	17		I.	Shadow	Egress	23	20 49
I.	Shadow	Ingress	16	16	34		III.	Transit	Egress	23	21 36
III.	Transit	Egress	16	17	10		I.	Transit	Egress	23	21 38
I.	Transit	Ingress	16	17	17		I.	Eclipse	Disapp.	24	15 39 45.8
I.	Shadow	Egress	16	18	55		I.	Occult.	Reapp.	24	18 48
I.	Transit	Egress	16	19	37		II.	Eclipse	Disapp.	24	21 42 2.3
I.	Eclipse	Disapp.	17	13	45	52.7	II.	Occult.	Reapp.	25	2 18
I.	Occult.	Reapp.	17	16	47		I.	Shadow	Ingress	25	12 57
II.	Eclipse	Disapp.	17	19	5	18.7	I.	Transit	Ingress	25	13 48
II.	Occult.	Reapp.	17	23	29		I.	Shadow	Egress	25	15 17
I.	Shadow	Ingress	18	11	2		I.	Transit	Egress	25	16 8
I.	Transit	Ingress	18	11	47		I.	Eclipse	Disapp.	26	10 8 2.2
I.	Shadow	Egress	18	13	23		I.	Occult.	Reapp.	26	13 17
I.	Transit	Egress	18	14	8		II.	Shadow	Ingress	26	15 56
I.	Eclipse	Disapp.	19	8	14	19.8	II.	Transit	Ingress	26	17 41
I.	Occult.	Reapp.	19	11	17		II.	Shadow	Egress	26	18 53
II.	Shadow	Ingress	19	13	22		II.	Transit	Egress	26	20 37
II.	Transit	Ingress	19	14	54		III.	Eclipse	Disapp.	27	4 26 31.7
II.	Shadow	Egress	19	16	8		I.	Shadow	Ingress	27	7 25
II.	Transit	Egress	19	17	50		I.	Transit	Ingress	27	8 18
III.	Eclipse	Disapp.	20	0	26	2.0	I.	Shadow	Egress	27	9 46
I.	Shadow	Ingress	20	5	31		I.	Transit	Egress	27	10 38
I.	Transit	Ingress	20	6	17		III.	Occult.	Reapp.	27	11 36
III.	Occult.	Reapp.	20	7	10		I.	Eclipse	Disapp.	28	4 36 40.3
I.	Shadow	Egress	20	7	52		I.	Occult.	Reapp.	28	7 48
I.	Transit	Egress	20	8	38		II.	Eclipse	Disapp.	28	10 59 55.9
I.	Eclipse	Disapp.	21	2	42	48.5	II.	Occult.	Reapp.	28	15 42
I.	Occult.	Reapp.	21	5	47		I.	Shadow	Ingress	29	1 54
II.	Eclipse	Disapp.	21	8	23	15.8	I.	Transit	Ingress	29	2 48
II.	Occult.	Reapp.	21	12	53		I.	Shadow	Egress	29	4 14
I.	Shadow	Ingress	22	0	0		I.	Transit	Egress	29	5 8
I.	Transit	Ingress	22	0	48		I.	Eclipse	Disapp.	29	23 5 6.6
I.	Shadow	Egress	22	2	20		I.	Occult.	Reapp.	30	2 17

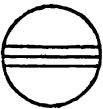

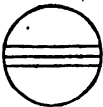
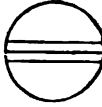
462 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

MARCH.

II. Shadow	Ingress	d	h	m	s	I. Shadow	Egress	d	h	m	s
II. Transit	Ingress	30	5	13		I. Transit	Egress	30	22	43	
II. Shadow	Egress	30	7	5		III. Transit	Egress	31	2	1	
II. Transit	Egress	30	8	10		IV. Eclipse	Disapp.	31	15	8	23.0
III. Shadow	Ingress	30	10	1		I. Eclipse	Disapp.	31	17	33	36.8
I. Shadow	Ingress	30	18	34		IV. Eclipse	Reapp.	31	19	52	24.8
I. Transit	Ingress	30	20	23		I. Occult.	Reapp.	31	20	47	
III. Shadow	Egress	30	21	18		IV. Occult.	Disapp.	31	23	50	
III. Transit	Egress	30	22	17							
III. Transit	Ingress	30	22	18							

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	d		III.	d	
II.	d		IV.	d	

APRIL.

II. Eclipse	Disapp.	d	h	m	s	III. Occult.	Reapp.	d	h	m	s
IV. Occult.	Reapp.	1	0	18	35.1	I. Eclipse	Disapp.	4	6	30	30.3
II. Occult.	Reapp.	1	4	46		I. Occult.	Reapp.	4	9	47	
I. Shadow	Ingress	1	5	7		II. Eclipse	Disapp.	4	13	36	25.4
I. Transit	Ingress	1	14	51		II. Occult.	Reapp.	4	18	31	
I. Shadow	Egress	1	15	48		I. Shadow	Ingress	5	3	48	
I. Transit	Egress	1	17	11		I. Transit	Ingress	5	4	48	
I. Eclipse	Disapp.	1	18	8		I. Shadow	Egress	5	6	8	
I. Occult.	Reapp.	2	12	2	2.4	I. Transit	Egress	5	7	8	
II. Shadow	Ingress	2	15	17		I. Eclipse	Disapp.	6	0	58	55.8
II. Transit	Ingress	2	18	31		I. Occult.	Reapp.	6	4	17	
II. Shadow	Egress	2	20	28		II. Shadow	Ingress	6	7	48	
II. Transit	Egress	2	21	27		II. Transit	Ingress	6	9	51	
III. Eclipse	Disapp.	2	23	24		II. Shadow	Egress	6	10	44	
I. Shadow	Ingress	3	8	26	25.8	II. Transit	Egress	6	12	47	
I. Transit	Ingress	3	9	20		I. Shadow	Ingress	6	22	17	
I. Shadow	Egress	3	10	18		III. Shadow	Ingress	6	22	34	
III. Eclipse	Reapp.	3	11	39		I. Transit	Ingress	6	23	18	
III. Occult.	Disapp.	3	11	59	45.4	I. Shadow	Egress	7	0	37	
I. Transit	Egress	3	12	17		I. Transit	Egress	7	1	38	
		3	12	38							

JUPITER'S SATELLITES, 1867. 463

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
III.	Shadow	Egress	7	2	17			III.	Transit	Ingress	14	7	2
III.	Transit	Ingress	7	2	41			III.	Transit	Egress	14	10	44
III.	Transit	Egress	7	6	23			I.	Eclipse	Disapp.	14	21	21 12.9
I.	Eclipse	Disapp.	7	19	27	25.3		I.	Occult.	Reapp.	15	0	46
I.	Occult.	Reapp.	7	22	47			II.	Eclipse	Disapp.	15	5	31 7.7
II.	Eclipse	Disapp.	8	2	54	56.9		II.	Occult.	Reapp.	15	10	40
II.	Occult.	Reapp.	8	7	54			I.	Shadow	Ingress	15	18	30
I.	Shadow	Ingress W.	8	16	45			I.	Transit	Ingress	15	19	47
I.	Transit	Ingress	8	17	48			I.	Shadow	Egress	15	21	0
I.	Shadow	Egress	8	19	6			I.	Transit	Egress	15	22	7
I.	Transit	Egress	8	20	8			I.	Eclipse	Disapp.	16	15	49 37.7
IV.	Shadow	Ingress	9	1	37			I.	Occult.	Reapp.	16	19	15
IV.	Shadow	Egress	9	6	33			II.	Shadow	Ingress	16	23	41
IV.	Transit	Ingress	9	11	24			II.	Transit	Ingress	17	1	58
I.	Eclipse	Disapp.	9	13	55	50.9		II.	Shadow	Egress	17	2	37
IV.	Transit	Egress W.	9	16	18			II.	Transit	Egress	17	4	54
I.	Occult.	Reapp.	9	17	16			IV.	Eclipse	Disapp.	17	9	16 57.5
II.	Shadow	Ingress	9	21	6			I.	Shadow	Ingress	17	13	8
II.	Transit	Ingress	9	23	13			IV.	Eclipse	Reapp.	17	14	0 36.1
II.	Shadow	Egress	10	0	2			I.	Transit	Ingress	17	14	17
II.	Transit	Egress	10	2	9			I.	Shadow	Egress	17	15	28
I.	Shadow	Ingress	10	11	14			III.	Eclipse	Disapp. W.	17	16	25 54.9
I.	Transit	Ingress	10	12	18			I.	Transit	Egress W.	17	16	37
III.	Eclipse	Disapp.	10	12	26	23.9		IV.	Occult.	Disapp.	17	19	54
I.	Shadow	Egress	10	13	34			III.	Eclipse	Reapp.	17	19	59 11 3
I.	Transit	Egress	10	14	38			III.	Occult.	Disapp.	17	20	59
III.	Eclipse	Reapp.	10	15	59	42.3		III.	Occult.	Reapp.	18	0	41
III.	Occult.	Disapp. W.	10	16	38			IV.	Occult.	Reapp.	18	0	49
III.	Occult.	Reapp.	10	20	21			I.	Eclipse	Disapp.	18	10	18 5.2
I.	Eclipse	Disapp.	11	8	24	18.5		I.	Occult.	Reapp.	18	13	45
I.	Occult.	Reapp.	11	11	46			II.	Eclipse	Disapp.	18	18	48 51.0
II.	Eclipse	Disapp. W.	11	16	12	43.6		II.	Occult.	Reapp.	19	0	2
II.	Occult.	Reapp.	11	21	17			I.	Shadow	Ingress	19	7	36
I.	Shadow	Ingress	12	5	42			I.	Transit	Ingress	19	8	46
I.	Transit	Ingress	12	6	47			I.	Shadow	Egress	19	9	57
I.	Shadow	Egress	12	8	3			I.	Transit	Egress	19	11	6
I.	Transit	Egress	12	9	8			I.	Eclipse	Disapp.	20	4	46 29.9
I.	Eclipse	Disapp.	13	2	52	43.4		I.	Occult.	Reapp.	20	8	14
I.	Occult.	Reapp.	13	6	16			II.	Shadow	Ingress	20	12	58
II.	Shadow	Ingress	13	10	23			II.	Transit	Ingress	20	15	20
II.	Transit	Ingress	13	12	36			II.	Shadow	Egress W.	20	15	54
II.	Shadow	Egress	13	13	19			II.	Transit	Egress	20	18	16
II.	Transit	Egress	13	15	32			I.	Shadow	Ingress	21	2	5
I.	Shadow	Ingress	14	0	11			I.	Transit	Ingress	21	3	16
I.	Transit	Ingress	14	1	17			I.	Shadow	Egress	21	4	25
I.	Shadow	Egress	14	2	31			I.	Transit	Egress	21	5	35
III.	Shadow	Ingress	14	2	34			III.	Shadow	Ingress	21	6	35
I.	Transit	Egress	14	3	37			III.	Shadow	Egress	21	10	17
III.	Shadow	Egress	14	6	17			III.	Transit	Ingress	21	11	21


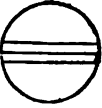


464 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

APRIL.

			d	h	m	s				d	h	m	s
III.	Transit	Egress	21	15	3		I.	Shadow	Ingress	26	9	30	
I.	Eclipse	Disapp.	21	23	14	59.6	I.	Transit	Ingress	26	10	44	
I.	Occult.	Reapp.	22	2	44		I.	Shadow	Egress	26	11	50	
II.	Eclipse	Disapp.	22	8	7	7.4	IV.	Transit	Egress	26	12	5	
II.	Occult.	Reapp.	22	13	25		I.	Transit	Egress	26	13	4	
I.	Shadow	Ingress	22	20	33		I.	Eclipse	Disapp.	27	6	40	15.9
I.	Transit	Ingress	22	21	45		I.	Occult.	Reapp.	27	10	12	
I.	Shadow	Egress	22	22	54		II.	Shadow	Ingress	W.	27	15	33
I.	Transit	Egress	23	0	5		II.	Transit	Ingress	27	18	3	
I.	Eclipse	Disapp.	23	17	43	24.4	II.	Shadow	Egress	27	18	29	
I.	Occult.	Reapp.	23	21	13		II.	Transit	Egress	27	20	58	
II.	Shadow	Ingress	24	2	16		I.	Shadow	Ingress	28	3	59	
II.	Transit	Ingress	24	4	41		I.	Transit	Ingress	28	5	13	
II.	Shadow	Egress	24	5	12		I.	Shadow	Egress	28	6	19	
II.	Transit	Egress	24	7	37		I.	Transit	Egress	28	7	33	
I.	Shadow	Ingress	24	15	2		III.	Shadow	Ingress	28	10	35	
I.	Transit	Ingress	W.	24	16	14	III.	Shadow	Egress	28	14	17	
I.	Shadow	Egress	24	17	22		III.	Transit	Ingress	W.	28	15	37
I.	Transit	Egress	24	18	34		III.	Transit	Egress	28	19	19	
III.	Eclipse	Disapp.	24	20	25	23.3	I.	Eclipse	Disapp.	29	1	8	45.6
III.	Eclipse	Reapp.	24	23	58	36.3	I.	Occult.	Reapp.	29	4	41	
III.	Occult.	Disapp.	25	1	16		II.	Eclipse	Disapp.	29	10	42	56.2
III.	Occult.	Reapp.	25	4	57		II.	Occult.	Reapp.	W.	29	16	8
I.	Eclipse	Disapp.	25	12	11	51.9	I.	Shadow	Ingress	29	22	27	
I.	Occult.	Reapp.	W.	25	15	33	I.	Transit	Ingress	29	23	43	
IV.	Shadow	Ingress	25	19	47		I.	Shadow	Egress	30	0	47	
II.	Eclipse	Disapp.	25	21	24	47.4	I.	Transit	Egress	30	2	2	
IV.	Shadow	Egress	26	0	43		I.	Eclipse	Disapp.	30	19	37	10.1
II.	Occult.	Reapp.	26	2	46		I.	Occult.	Reapp.	30	23	10	
IV.	Transit	Ingress	26	7	15								

Phases of the Ellipses of the Satellites for an Inverting Telescope.

I.	d		III.	d	r	
II.	d		IV.	d	r	

JUPITER'S SATELLITES, 1867. 465

WASHINGTON MEAN TIME.

MAY.

		d	h	m	s			d	h	m	s
II. Shadow	Ingress	1	4	51		II. Transit	Ingress	8	10	5	
II. Transit	Ingress	1	7	24		II. Shadow	Egress	8	10	22	
II. Shadow	Egress	1	7	47		II. Transit	Egress	8	12	59	
II. Transit	Egress	1	10	19		I. Shadow	Ingress	8	18	49	
I. Shadow	Ingress	1	16	56		I. Transit	Ingress	8	20	9	
I. Transit	Ingress	1	18	12		I. Shadow	Egress	8	21	10	
I. Shadow	Egress	1	19	16		I. Transit	Egress	8	22	29	
I. Transit	Egress	1	20	32		III. Eclipse	Disapp.	9	4	25	0.0
III. Eclipse	Disapp.	2	0	25	10.6	III. Eclipse	Reapp.	9	7	58	3.0
III. Eclipse	Reapp.	2	3	58	19.2	III. Occult.	Disapp.	9	9	42	
III. Occult.	Disapp.	2	5	30		III. Occult.	Reapp.	9	13	22	
III. Occult.	Reapp.	2	9	11		I. Eclipse	Disapp. W.	9	15	59	23.7
I. Eclipse	Disapp.	2	14	5	37.8	I. Occult.	Reapp.	9	19	36	
I. Occult.	Reapp.	2	17	40		II. Eclipse	Disapp.	10	2	36	8.4
II. Eclipse	Disapp.	3	0	0	33.1	II. Occult.	Reapp.	10	8	9	
II. Occult.	Reapp.	3	5	28		I. Shadow	Ingress	10	13	18	
I. Shadow	Ingress	3	11	24		I. Transit	Ingress	10	14	38	
I. Transit	Ingress	3	12	41		I. Shadow	Egress W.	10	15	38	
I. Shadow	Egress	3	13	44		I. Transit	Egress	10	16	58	
I. Transit	Egress W.	3	15	1		I. Eclipse	Disapp.	11	10	27	47.8
IV. Eclipse	Disapp.	4	3	25	49.9	I. Occult.	Reapp.	11	14	5	
IV. Eclipse	Reapp.	4	8	8	42.5	II. Shadow	Ingress	11	20	44	
I. Eclipse	Disapp.	4	8	34	1.7	II. Transit	Ingress	11	23	25	
I. Occult.	Reapp.	4	12	9		II. Shadow	Egress	11	23	39	
IV. Occult.	Disapp. W.	4	15	27		II. Transit	Egress	12	2	19	
II. Shadow	Ingress	4	18	8		I. Shadow	Ingress	12	7	46	
IV. Occult.	Reapp.	4	20	21		I. Transit	Ingress	12	9	7	
II. Transit	Ingress	4	20	45		I. Shadow	Egress	12	10	7	
II. Shadow	Egress	4	21	4		I. Transit	Egress	12	11	27	
II. Transit	Egress	4	23	39		IV. Shadow	Ingress	12	13	57	
I. Shadow	Ingress	5	5	52		III. Shadow	Ingress	12	18	34	
I. Transit	Ingress	5	7	11		IV. Shadow	Egress	12	18	52	
I. Shadow	Egress	5	8	13		III. Shadow	Egress	12	22	17	
I. Transit	Egress	5	9	30		III. Transit	Ingress	13	0	0	
III. Shadow	Ingress	5	14	34		IV. Transit	Ingress	13	2	30	
III. Shadow	Egress	5	18	17		III. Transit	Egress	13	3	40	
III. Transit	Ingress	5	19	50		I. Eclipse	Disapp.	13	4	56	17.8
III. Transit	Egress	5	23	32		IV. Transit	Egress	13	7	16	
I. Eclipse	Disapp.	6	3	2	31.3	I. Occult.	Reapp.	13	8	34	
I. Occult.	Reapp.	6	6	38		II. Eclipse	Disapp. W.	13	15	54	2.5
II. Eclipse	Disapp.	6	13	18	34.5	II. Occult.	Reapp.	13	21	28	
II. Occult.	Reapp.	6	18	49		I. Shadow	Ingress	14	2	15	
I. Shadow	Ingress	7	0	21		I. Transit	Ingress	14	3	36	
I. Transit	Ingress	7	1	40		I. Shadow	Egress	14	4	35	
I. Shadow	Egress	7	2	41		I. Transit	Egress	14	5	56	
I. Transit	Egress	7	4	0		I. Eclipse	Disapp.	14	23	24	42.7
I. Eclipse	Disapp.	7	21	30	55.9	I. Occult.	Reapp.	15	2	3	
I. Occult.	Reapp.	8	1	7		II. Shadow	Ingress	15	10	2	
II. Shadow	Ingress	8	7	26		II. Transit	Ingress	15	12	45	

466 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

MAY.

				d	h	m	s					d	h	m	s
II.	Shadow	Egress		15	12	57		II.	Transit	Egress		22	18	15	
II.	Transit	Egress	W.	15	15	38		I.	Shadow	Ingress		22	22	37	
I.	Shadow	Ingress		15	20	43		I.	Transit	Ingress		23	0	0	
I.	Transit	Ingress		15	22	5		I.	Shadow	Egress		23	0	57	
I.	Shadow	Egress		15	23	4		I.	Transit	Egress		23	2	19	
I.	Transit	Egress		16	0	24		III.	Eclipse	Disapp.		23	12	25	22.2
III.	Eclipse	Disapp.		16	8	25	27.6	III.	Eclipse	Reapp.	W.	23	15	58	10.6
III.	Eclipse	Reapp.		16	11	58	24.0	III.	Occult.	Disapp.		23	17	55	
III.	Occult.	Disapp.		16	13	50		I.	Eclipse	Disapp.		23	19	47	0.3
III.	Occult.	Reapp.		16	17	30		III.	Occult.	Reapp.		23	21	34	
I.	Eclipse	Disapp.		16	17	53	11.2	I.	Occult.	Reapp.		23	23	27	
I.	Occult.	Reapp.		16	21	32		II.	Eclipse	Disapp.		24	7	46	49.3
II.	Eclipse	Disapp.		17	5	11	33.5	II.	Occult.	Reapp.		24	13	24	
II.	Occult.	Reapp.		17	10	47		I.	Shadow	Ingress		24	17	6	
I.	Shadow	Ingress	W.	17	15	12		I.	Transit	Ingress		24	18	28	
I.	Transit	Ingress		17	16	34		I.	Shadow	Egress		24	19	26	
I.	Shadow	Egress		17	17	32		I.	Transit	Egress		24	20	47	
I.	Transit	Egress		17	18	53		I.	Eclipse	Disapp.	W.	25	14	15	24.7
I.	Eclipse	Disapp.		18	12	21	35.3	I.	Occult.	Reapp.		25	17	55	
I.	Occult.	Reapp.		18	16	1		II.	Shadow	Ingress		26	1	55	
II.	Shadow	Ingress		18	23	19		II.	Transit	Ingress		26	4	40	
II.	Transit	Ingress		19	2	4		II.	Shadow	Egress		26	4	50	
II.	Shadow	Egress		19	2	14		II.	Transit	Egress		26	7	33	
II.	Transit	Egress		19	4	57		I.	Shadow	Ingress		26	11	34	
I.	Shadow	Ingress		19	9	40		I.	Transit	Ingress		26	12	56	
I.	Transit	Ingress		19	11	3		I.	Shadow	Egress	W.	26	13	54	
I.	Shadow	Egress		19	12	1		I.	Transit	Egress	W.	26	14	16	
I.	Transit	Egress		19	12	21		III.	Shadow	Ingress		27	2	34	
III.	Shadow	Ingress		19	22	34		III.	Shadow	Egress		27	6	16	
III.	Shadow	Egress		20	2	17		III.	Transit	Ingress		27	8	8	
III.	Transit	Ingress		20	4	6		I.	Eclipse	Disapp.		27	8	43	55.8
I.	Eclipse	Disapp.		20	6	50	6.0	III.	Transit	Egress		27	11	47	
III.	Transit	Egress		20	7	46		I.	Occult.	Reapp.		27	12	24	
I.	Occult.	Reapp.		20	10	30		II.	Eclipse	Disapp.		27	21	4	30.4
II.	Eclipse	Disapp.		20	18	29	21.2	II.	Occult.	Reapp.		28	2	41	
IV.	Eclipse	Disapp.		20	21	34	42.1	I.	Shadow	Ingress		28	6	3	
II.	Occult.	Reapp.		21	0	6		I.	Transit	Ingress		28	7	25	
IV.	Eclipse	Reapp.		21	2	16	26.7	I.	Shadow	Egress		28	8	23	
I.	Shadow	Ingress		21	4	9		I.	Transit	Egress		28	9	44	
I.	Transit	Ingress		21	5	31		I.	Eclipse	Disapp.		29	3	12	21.4
I.	Shadow	Egress		21	6	29		I.	Occult.	Reapp.		29	6	52	
I.	Transit	Egress		21	7	50		IV.	Shadow	Ingress		29	8	8	
IV.	Occult.	Disapp.		21	10	21		IV.	Shadow	Egress		29	13	2	
IV.	Occult.	Reapp.	W.	21	15	10		II.	Shadow	Ingress	W.	29	15	13	
I.	Eclipse	Disapp.		22	1	18	31.2	II.	Transit	Ingress		29	17	58	
I.	Occult.	Reapp.		22	4	58		II.	Shadow	Egress		29	18	8	
II.	Shadow	Ingress		22	12	37		II.	Transit	Egress		29	20	51	
II.	Transit	Ingress	W.	22	15	22		IV.	Transit	Ingress		29	21	2	
II.	Shadow	Egress	W.	22	15	32		I.	Shadow	Ingress		30	0	31	

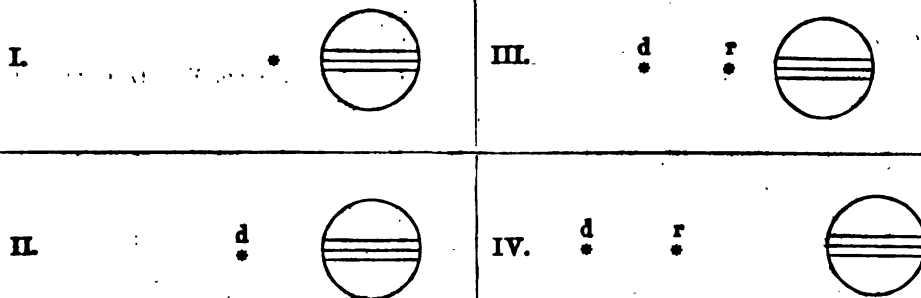
JUPITER'S SATELLITES, 1867. 467

WASHINGTON MEAN TIME.

MAY.

			d	h	m	s				d	h	m	s
IV.	Transit	Egress	30	1	42			I.	Occult.	Reapp.	31	1	21
I.	Transit	Ingress	30	1	53			III.	Occult.	Reapp.	31	1	34
I.	Shadow	Egress	30	2	51			II.	Eclipse	Disapp.	31	10	21 56.0
I.	Transit	Egress	30	4	13			II.	Occult.	Reapp. W.	31	15	58
III.	Eclipse	Disapp.	30	16	25 23.1			I.	Shadow	Ingress	31	18	59
III.	Eclipse	Reapp.	30	19	58 2.5			I.	Transit	Ingress	31	20	21
I.	Eclipse	Disapp.	30	21	40 51.0			I.	Shadow	Egress	31	21	19
III.	Occult.	Disapp.	30	21	55			I.	Transit	Egress	31	22	41

Phases of the Eclipses of the Satellites for an Inverting Telescope.



JUNE.

			d	h	m	s				d	h	m	s
I.	Eclipse	Disapp.	1	16	9 15.7			I.	Transit	Egress	4	11	38
I.	Occult.	Reapp.	1	19	49			I.	Eclipse	Disapp.	5	5	6 13.8
II.	Shadow	Ingress	2	4	31			I.	Occult.	Reapp.	5	8	45
II.	Transit	Ingress	2	7	15			II.	Shadow	Ingress	5	17	49
II.	Shadow	Egress	2	7	28			II.	Transit	Ingress	5	20	32
II.	Transit	Egress	2	10	8			II.	Shadow	Egress	5	20	44
I.	Shadow	Ingress W.	2	13	28			II.	Transit	Egress	5	23	24
I.	Transit	Ingress W.	2	14	59			I.	Shadow	Ingress	6	2	25
I.	Shadow	Egress W.	2	15	48			I.	Transit	Ingress	6	3	46
I.	Transit	Egress	2	16	10			I.	Shadow	Egress	6	4	45
III.	Shadow	Ingress	3	6	34			I.	Transit	Egress	6	6	6
III.	Shadow	Egress	3	10	16			IV.	Eclipse	Disapp. W.	6	15	43 5.0
I.	Eclipse	Disapp.	3	10	37 47.4			IV.	Eclipse	Reapp.	6	20	24 19.4
III.	Transit	Ingress	3	12	7			III.	Eclipse	Disapp.	6	20	25 2.0
I.	Occult.	Reapp. W.	3	14	17			I.	Eclipse	Disapp.	6	23	24 44.2
III.	Transit	Egress W.	3	15	45			III.	Eclipse	Reapp.	6	23	57 31.0
II.	Eclipse	Disapp.	3	23	30 31.6			III.	Occult.	Disapp.	7	1	51
II.	Occult.	Reapp.	4	5	14			I.	Occult.	Reapp.	7	3	14
I.	Shadow	Ingress	4	7	56			IV.	Occult.	Disapp.	7	4	26
I.	Transit	Ingress	4	9	18			III.	Occult.	Reapp.	7	5	29
I.	Shadow	Egress	4	10	16			IV.	Occult.	Reapp.	7	9	11

468 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

JUNE.

II.	Eclipse	Disapp.	W.	7	12	56	55.2	IV.	Shadow	Ingress	15	2	19		
II.	Occult.	Reapp.		7	18	30		I.	Transit	Egress	15	2	25		
I.	Shadow	Ingress		7	20	53		IV.	Shadow	Egress	15	7	11		
I.	Transit	Ingress		7	22	14		IV.	Transit	Ingress	W.	15	14	42	
I.	Shadow	Egress		7	23	13		IV.	Transit	Egress		15	19	15	
I.	Transit	Egress		8	0	34		I.	Eclipse	Disapp.		15	19	57	6.7
I.	Eclipse	Disapp.		8	18	3	9.6	I.	Occult.	Reapp.		15	23	34	
I.	Occult.	Reapp.		8	21	43		II.	Shadow	Ingress		16	9	43	
II.	Shadow	Ingress		9	7	7		II.	Transit	Ingress	W.	16	12	20	
II.	Transit	Ingress		9	9	49		II.	Shadow	Egress	W.	16	12	38	
II.	Shadow	Egress		9	10	2		II.	Transit	Egress	W.	16	15	12	
II.	Transit	Egress	W.	9	12	41		I.	Shadow	Ingress		16	17	15	
I.	Shadow	Ingress	W.	9	15	22		I.	Transit	Ingress		16	18	34	
I.	Transit	Ingress		9	16	42		I.	Shadow	Egress		16	19	35	
I.	Shadow	Egress		9	17	41		I.	Transit	Egress		16	20	53	
I.	Transit	Egress		9	18	2		I.	Eclipse	Disapp.	W.	17	14	25	40.2
III.	Shadow	Ingress		10	10	34		III.	Shadow	Ingress	W.	17	14	34	
I.	Eclipse	Disapp.		10	12	31	42.0	I.	Occult.	Reapp.		17	18	1	
III.	Shadow	Egress	W.	10	14	16		III.	Shadow	Egress		17	18	16	
III.	Transit	Ingress		10	16	2		III.	Transit	Ingress		17	19	51	
I.	Occult.	Reapp.		10	16	10		III.	Transit	Egress		17	23	28	
III.	Transit	Egress		10	19	39		II.	Eclipse	Disapp.		18	4	49	13.9
II.	Eclipse	Disapp.		11	2	14	25.7	II.	Occult.	Reapp.		18	10	15	
II.	Occult.	Reapp.		11	7	45		I.	Shadow	Ingress		18	11	44	
I.	Shadow	Ingress		11	9	50		I.	Transit	Ingress	W.	18	13	1	
I.	Transit	Ingress		11	11	10		I.	Shadow	Egress	W.	18	14	3	
I.	Shadow	Egress		11	12	10		I.	Transit	Egress	W.	18	15	20	
I.	Transit	Egress		11	13	30		I.	Eclipse	Disapp.		19	8	54	8.1
I.	Eclipse	Disapp.		12	7	0	9.1	I.	Occult.	Reapp.	W.	19	12	29	
I.	Occult.	Reapp.		12	10	38		II.	Shadow	Ingress		19	23	1	
II.	Shadow	Ingress		12	20	25		II.	Transit	Ingress		20	1	35	
II.	Transit	Ingress		12	23	5		II.	Shadow	Egress		20	1	56	
II.	Shadow	Egress		12	23	20		II.	Transit	Egress		20	4	26	
II.	Transit	Egress		13	1	57		I.	Shadow	Ingress		20	6	12	
I.	Shadow	Ingress		13	4	19		I.	Transit	Ingress		20	7	29	
I.	Transit	Ingress		13	5	38		I.	Shadow	Egress		20	8	32	
I.	Shadow	Egress		13	6	38		I.	Transit	Egress		20	9	48	
I.	Transit	Egress		13	7	57		I.	Eclipse	Disapp.		21	3	22	40.8
III.	Eclipse	Disapp.		14	0	24	43.3	III.	Eclipse	Disapp.		21	4	24	49.7
I.	Eclipse	Disapp.		14	1	28	40.5	I.	Occult.	Reapp.		21	6	57	
III.	Eclipse	Reapp.		14	3	57	0.9	III.	Eclipse	Reapp.		21	7	56	54.5
I.	Occult.	Reapp.		14	5	6		III.	Occult.	Disapp.		21	9	32	
III.	Occult.	Disapp.		14	5	43		III.	Occult.	Reapp.	W.	21	13	9	
III.	Occult.	Reapp.		14	9	20		II.	Eclipse	Disapp.		21	18	6	34.1
II.	Eclipse	Disapp.	W.	14	15	31	47.7	II.	Occult.	Reapp.		21	23	27	
II.	Occult.	Reapp.		14	21	0		I.	Shadow	Ingress		22	0	40	
I.	Shadow	Ingress		14	22	47		I.	Transit	Ingress		22	1	56	
I.	Transit	Ingress		15	0	6		I.	Shadow	Egress		22	3	0	
I.	Shadow	Egress		15	1	7		I.	Transit	Egress		22	4	15	

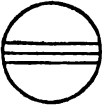
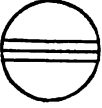
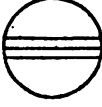
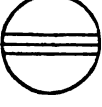
JUPITER'S SATELLITES, 1867. 469

WASHINGTON MEAN TIME.

JUNE.

I. Eclipse	Disapp.	^d 22 ^h 21 ^m 51 ^s 7.7	II. Transit	Ingress	^d 27 ^h 4 ^m 3 ^s
I. Occult.	Reapp.	23 1 24	II. Shadow	Egress	27 4 32
IV. Eclipse	Disapp.	23 9 56 2.0	II. Transit	Egress	27 6 55
II. Shadow	Ingress W.	23 12 19	I. Shadow	Ingress	27 8 5
IV. Eclipse	Reapp. W.	23 14 32 24.2	I. Transit	Ingress	27 9 18
II. Transit	Ingress W.	23 14 49	I. Shadow	Egress	27 10 25
II. Shadow	Egress W.	23 15 14	I. Transit	Egress W.	27 11 37
II. Transit	Egress	23 17 41	I. Eclipse	Disapp.	28 5 16 45.2
I. Shadow	Ingress	23 19 9	III. Eclipse	Disapp.	28 8 25 1.0
I. Transit	Ingress	23 20 24	I. Occult.	Reapp.	28 8 46
I. Shadow	Egress	23 21 29	III. Eclipse	Reapp. W.	28 11 56 51.8
IV. Occult.	Disapp.	23 21 37	III. Occult.	Disapp. W.	28 13 14
I. Transit	Egress	23 22 43	III. Occult.	Reapp.	28 16 50
IV. Occult.	Reapp.	24 2 16	II. Eclipse	Disapp.	28 20 41 17.6
I. Eclipse	Disapp.	24 16 19 42.2	II. Occult.	Reapp.	29 1 52
III. Shadow	Ingress	24 18 34	I. Shadow	Ingress	29 2 34
I. Occult.	Reapp.	24 19 52	I. Transit	Ingress	29 3 46
III. Shadow	Egress	24 22 16	I. Shadow	Egress	29 4 54
III. Transit	Ingress	24 23 36	I. Transit	Egress	29 6 4
III. Transit	Egress	25 3 13	I. Eclipse	Disapp.	29 23 45 13.1
II. Eclipse	Disapp.	25 7 23 57.3	I. Occult.	Reapp.	30 3 14
II. Occult.	Reapp. W.	25 12 40	II. Shadow	Ingress W.	30 14 55
I. Shadow	Ingress W.	25 13 37	II. Transit	Ingress	30 17 16
I. Transit	Ingress W.	25 14 51	II. Shadow	Egress	30 17 50
I. Shadow	Egress	25 15 57	II. Transit	Egress	30 20 8
I. Transit	Egress	25 17 10	I. Shadow	Ingress	30 21 2
I. Eclipse	Disapp.	26 10 48 11.2	I. Transit	Ingress	30 22 13
I. Occult.	Reapp. W.	26 14 19	I. Shadow	Egress	30 23 22
II. Shadow	Ingress	27 1 37			

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	d •		III.	d •	r •	
II.	d •		IV.	d •	r •	

470 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

JULY.

I.	Transit	Egress	d	h	m	s		I.	Eclipse	Disapp.	8	20	8	0.6
I.	Eclipse	Disapp.	1	18	13	48.8		I.	Occult.	Reapp.	8	23	29	
IV.	Shadow	Ingress	1	20	30			III.	Shadow	Ingress	9	2	33	
I.	Occult.	Reapp.	1	21	41			III.	Shadow	Egress	9	6	15	
III.	Shadow	Ingress	1	22	34			III.	Transit	Ingress	9	6	52	
IV.	Shadow	Egress	2	1	20			III.	Transit	Egress	9	10	27	
III.	Shadow	Egress	2	2	16			II.	Eclipse	Disapp. W.	9	12	33	14.0
III.	Transit	Ingress	2	3	16			I.	Shadow	Ingress	9	17	24	
III.	Transit	Egress	2	6	53			II.	Occult.	Reapp.	9	17	26	
IV.	Transit	Ingress	2	7	24			I.	Transit	Ingress	9	18	27	
II.	Eclipse	Disapp.	2	9	58	36.8		I.	Shadow	Egress	9	19	44	
IV.	Transit	Egress W.	2	11	52			I.	Transit	Egress	9	20	46	
II.	Occult.	Reapp. W.	2	15	4			IV.	Eclipse	Disapp.	10	4	4	20.0
I.	Shadow	Ingress W.	2	15	31			IV.	Eclipse	Reapp.	10	8	40	26.4
I.	Transit	Ingress	2	16	40			IV.	Occult.	Disapp. W.	10	13	48	
I.	Shadow	Egress	2	17	51			I.	Eclipse	Disapp. W.	10	14	36	32.4
I.	Transit	Egress	2	18	59			I.	Occult.	Reapp.	10	17	56	
I.	Eclipse	Disapp. W	3	12	42	18.9		IV.	Occult.	Reapp.	10	18	22	
I.	Occult.	Reapp.	3	16	8			II.	Shadow	Ingress	11	6	51	
II.	Shadow	Ingress	4	4	11			II.	Transit	Ingress	11	8	54	
II.	Transit	Ingress	4	6	29			II.	Shadow	Egress	11	9	46	
II.	Shadow	Egress	4	7	9			II.	Transit	Egress W.	11	11	45	
II.	Transit	Egress	4	9	20			I.	Shadow	Ingress W.	11	11	53	
I.	Shadow	Ingress	4	9	59			I.	Transit	Ingress W.	11	12	54	
I.	Transit	Ingress W.	4	11	7			I.	Shadow	Egress W.	11	14	13	
I.	Shadow	Egress W.	4	12	19			I.	Transit	Egress W.	11	15	13	
I.	Transit	Egress W.	4	13	26			I.	Eclipse	Disapp.	12	9	5	9.2
I.	Eclipse	Disapp	5	7	10	54.3		I.	Occult.	Reapp. W.	12	12	23	
I.	Occult.	Reapp.	5	10	35			III.	Eclipse	Disapp.	12	16	26	19.5
III.	Eclipse	Disapp. W.	5	12	25	54.8		III.	Eclipse	Reapp.	12	19	57	38.9
III.	Eclipse	Reapp.	5	15	57	30.4		III.	Occult.	Disapp.	12	20	26	
III.	Occult.	Disapp.	5	16	53			III.	Occult.	Reapp.	13	0	2	
III.	Occult.	Reapp.	5	20	28			II.	Eclipse	Disapp.	13	1	50	32.7
II.	Eclipse	Disapp.	5	23	15	55.6		I.	Shadow	Ingress	13	6	21	
II.	Occult.	Reapp.	6	4	15			II.	Occult.	Reapp.	13	6	36	
I.	Shadow	Ingress	6	4	27			I.	Transit	Ingress	13	7	21	
I.	Transit	Ingress	6	5	34			I.	Shadow	Egress	13	8	41	
I.	Shadow	Egress	6	6	47			I.	Transit	Egress	13	9	40	
I.	Transit	Egress	6	7	53			I.	Eclipse	Disapp.	14	3	33	39.9
I.	Eclipse	Disapp.	7	1	20	23.4		I.	Occult.	Reapp.	14	6	50	
I.	Occult.	Reapp.	7	5	2			II.	Shadow	Ingress	14	20	9	
II.	Shadow	Ingress	7	17	32			II.	Transit	Ingress	14	22	5	
II.	Transit	Ingress	7	19	42			II.	Shadow	Egress	14	23	4	
II.	Shadow	Egress	7	20	27			I.	Shadow	Ingress	15	0	50	
II.	Transit	Egress	7	22	33			II.	Transit	Egress	15	0	56	
I.	Shadow	Ingress	7	22	56			I.	Transit	Ingress	15	1	48	
I.	Transit	Ingress	8	0	1			I.	Shadow	Egress	15	3	10	
I.	Shadow	Egress	8	1	16			I.	Transit	Egress	15	4	7	
I.	Transit	Egress	8	2	20			I.	Eclipse	Disapp.	15	22	2	18.6

JUPITER'S SATELLITES, 1867. 471

WASHINGTON MEAN TIME.

JULY.

			d	h	m	s				d	h	m	s	
I.	Occult.	Reapp.	16	1	16			III.	Shadow	Egress	W.	23	14	15
III.	Shadow	Ingress	16	6	33			III.	Transit	Egress		23	17	24
III.	Shadow	Egress	W.	16	10	15		II.	Eclipse	Disapp.		23	17	42 28.3
III.	Transit	Ingress	W.	16	10	23		I.	Shadow	Ingress		23	21	12
III.	Transit	Egress	W.	16	13	58		I.	Transit	Ingress		23	22	0
II.	Eclipse	Disapp.	W.	16	15	7 50.7		II.	Occult.	Reapp.		23	22	3
I.	Shadow	Ingress		16	19	18		I.	Shadow	Egress		23	23	32
II.	Occult.	Reapp.		16	19	45		I.	Transit	Egress		24	0	19
I.	Transit	Ingress		16	20	14		I.	Eclipse	Disapp.		24	18	25 18.1
I.	Shadow	Egress		16	21	38		I.	Occult.	Reapp.		24	21	29
I.	Transit	Egress		16	22	33		II.	Shadow	Ingress	W.	25	12	5
I.	Eclipse	Disapp.		17	16	30 51.9		II.	Transit	Ingress	W.	25	13	36
I.	Occult.	Reapp.		17	19	43		II.	Shadow	Egress	W.	25	15	0
II.	Shadow	Ingress		18	9	28		I.	Shadow	Ingress	W.	25	15	41
II.	Transit	Ingress	W.	18	11	16		I.	Transit	Ingress		25	16	27
II.	Shadow	Egress	W.	18	12	23		II.	Transit	Egress		25	16	28
I.	Shadow	Ingress	W.	18	13	47		I.	Shadow	Egress		25	18	1
II.	Transit	Egress	W.	18	14	7		I.	Transit	Egress		25	18	45
I.	Transit	Ingress	W.	18	14	41		I.	Eclipse	Disapp.	W.	26	12	53 58.7
IV.	Shadow	Ingress	W.	18	14	42		I.	Occult.	Reapp.	W.	26	15	46
I.	Shadow	Egress		18	16	7		IV.	Eclipse	Disapp.		26	22	15 44.2
I.	Transit	Egress		18	17	0		III.	Eclipse	Disapp.		27	0	27 52.3
IV.	Shadow	Egress		18	19	30		IV.	Eclipse	Reapp.		27	2	49 11.6
IV.	Transit	Ingress		18	23	8		IV.	Occult.	Disapp.		27	5	4
IV.	Transit	Egress		19	3	33		III.	Occult.	Reapp.		27	6	55
I.	Eclipse	Disapp.	W.	19	10	59 30.7		II.	Eclipse	Disapp.		27	6	59 48.8
I.	Occult.	Reapp.	W.	19	14	10		IV.	Occult.	Reapp.	W.	27	9	32
III.	Eclipse	Disapp.		19	20	26 54.0		I.	Shadow	Ingress	W.	27	10	9
III.	Occult.	Reapp.		20	3	30		I.	Transit	Ingress	W.	27	10	53
II.	Eclipse	Disapp.		20	4	25 10.0		II.	Occult.	Reapp.	W.	27	11	12
I.	Shadow	Ingress		20	8	15		I.	Shadow	Egress	W.	27	12	29
II.	Occult.	Reapp.		20	8	54		I.	Transit	Egress	W.	27	13	12
I.	Transit	Ingress		20	9	7		I.	Eclipse	Disapp.		28	7	22 32.6
I.	Shadow	Egress	W.	20	10	35		I.	Occult.	Reapp.	W.	28	10	22
I.	Transit	Egress	W.	20	11	26		II.	Shadow	Ingress		29	1	24
I.	Eclipse	Disapp.		21	5	28 2.7		II.	Transit	Ingress		29	2	45
I.	Occult.	Reapp.		21	8	26		II.	Shadow	Egress		29	4	19
II.	Shadow	Ingress		21	22	46		I.	Shadow	Ingress		29	4	38
II.	Transit	Ingress		22	0	26		I.	Transit	Ingress		29	5	19
II.	Shadow	Egress		22	1	41		II.	Transit	Egress		29	5	37
I.	Shadow	Ingress		22	2	44		I.	Shadow	Egress		29	6	58
II.	Transit	Egress		22	3	18		I.	Transit	Egress		29	7	38
I.	Transit	Ingress		22	3	34		I.	Eclipse	Disapp.		30	1	51 14.7
I.	Shadow	Egress		22	5	4		I.	Occult.	Reapp.		30	4	48
I.	Transit	Egress		22	5	53		III.	Shadow	Ingress	W.	30	14	35
I.	Eclipse	Disapp.		22	23	56 43.1		III.	Transit	Ingress		30	17	13
I.	Occult.	Reapp.		23	3	3		III.	Shadow	Egress		30	18	15
III.	Shadow	Ingress	W.	23	10	34		II.	Eclipse	Disapp.		30	20	17 8.1
III.	Transit	Ingress	W.	23	13	50		III.	Transit	Egress		30	20	48

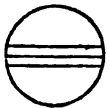
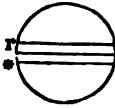
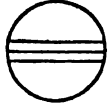

472 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

JULY.

I. Shadow	Ingress	d	h	m	s	I. Transit	Egress	d	h	m	s
I. Transit	Ingress	30	23	6		I. Eclipse	Disapp.	31	20	19	51.6
II. Occult.	Reapp.	31	0	22		I. Occult.	Reapp.	31	23	14	
I. Shadow	Egress	31	1	26							

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.	d		III.	d	r	
II.	d		IV.	d	r	

AUGUST.

II. Shadow	Ingress	W.	d	h	m	s	II. Transit	Ingress	d	h	m	s
II. Transit	Ingress	W.	1	14	43		I. Shadow	Ingress	5	5	3	
I. Shadow	Ingress		1	15	54		II. Shadow	Egress	5	6	32	
II. Shadow	Egress		1	17	35		I. Transit	Egress	5	6	57	
I. Transit	Ingress		1	17	38		II. Transit	Egress	5	7	3	
II. Transit	Egress		1	18	11		I. Shadow	Egress	5	7	55	
I. Shadow	Egress		1	18	46		I. Transit	Egress	5	8	52	
II. Shadow	Egress		1	19	55		I. Eclipse	Disapp.	5	9	22	
I. Transit	Egress		1	20	30		I. Occult.	Reapp.	6	3	45	53.8
I. Eclipse	Disapp.		2	14	48	34.1	II. Shadow	Ingress	6	6	33	
I. Occult.	Reapp.		2	17	41		III. Shadow	Ingress	6	18	35	
III. Eclipse	Disapp.		3	4	27	38.5	III. Transit	Ingress	6	20	33	
II. Eclipse	Disapp.	W.	3	9	34	30.2	III. Shadow	Egress	6	22	15	
III. Occult.	Reapp.	W.	3	10	16		II. Eclipse	Disapp.	6	22	51	51.6
I. Shadow	Ingress	W.	3	12	3		III. Transit	Egress	7	0	8	
I. Transit	Ingress	W.	3	12	37		I. Shadow	Ingress	7	1	0	
II. Occult.	Reapp.	W.	3	13	30		I. Transit	Ingress	7	1	29	
I. Shadow	Egress	W.	3	14	23		II. Occult.	Reapp.	7	2	36	
I. Transit	Egress	W.	3	14	56		I. Shadow	Egress	7	3	20	
IV. Shadow	Ingress	W.	4	8	55		I. Transit	Egress	7	4	48	
I. Eclipse	Disapp.	W.	4	9	17	9.8	I. Eclipse	Disapp.	7	22	14	32.5
I. Occult.	Reapp.	W.	4	12	6		I. Occult.	Reapp.	8	0	59	
IV. Shadow	Egress	W.	4	13	40		II. Shadow	Ingress	8	17	21	
IV. Transit	Ingress	W.	4	14	0		II. Transit	Ingress	8	18	12	
IV. Transit	Egress		4	18	25		I. Shadow	Ingress	8	19	29	
II. Shadow	Ingress		5	4	2		I. Transit	Ingress	8	19	55	

JUPITER'S SATELLITES, 1867. 473

WASHINGTON MEAN TIME.

AUGUST.

		d	h	m	s		d	h	m	s
II. Shadow	Egress	8	20	15		I. Occult.	Reapp.	16	21	9
II. Transit	Egress	8	21	4		III. Eclipse	Disapp. W.	17	12	29 39.7
I. Shadow	Egress	8	21	49		II. Eclipse	Disapp. W.	17	14	44 6.8
I. Transit	Egress	8	22	14		I. Shadow	Ingress W.	17	15	51
I. Eclipse	Disapp.	9	16	43 16.9		I. Transit	Ingress W.	17	16	4
I. Occult.	Reapp.	9	19	25		III. Occult.	Reapp.	17	16	53
III. Eclipse	Disapp.	10	8	28 35.5		II. Occult.	Reapp.	17	17	57
II. Eclipse	Disapp. W.	10	12	9 15.8		I. Shadow	Egress	17	18	11
III. Occult.	Reapp. W.	10	13	35		I. Transit	Egress	17	18	23
I. Shadow	Ingress W.	10	13	57		I. Eclipse	Disapp. W.	18	13	6 46.6
I. Transit	Ingress W.	10	14	21		I. Occult.	Reapp. W.	18	15	35
II. Occult.	Reapp. W.	10	15	44		II. Shadow	Ingress W.	19	9	18
I. Shadow	Egress W.	10	16	17		II. Transit	Ingress W.	19	9	37
I. Transit	Egress	10	16	40		I. Shadow	Ingress W.	19	10	20
I. Eclipse	Disapp. W.	11	11	11 54.4		I. Transit	Ingress W.	19	10	30
I. Occult.	Reapp. W.	11	13	51		II. Shadow	Egress W.	19	12	12
II. Shadow	Ingress	12	6	40		II. Transit	Egress W.	19	12	29
II. Transit	Ingress	12	7	21		I. Shadow	Egress W.	19	12	40
I. Shadow	Ingress W.	12	8	26		I. Transit	Egress W.	19	12	49
I. Transit	Ingress W.	12	8	47		I. Eclipse	Disapp.	20	7	35 34.3
II. Shadow	Egress W.	12	9	34		I. Occult.	Reapp. W.	20	10	1
II. Transit	Egress W.	12	10	13		III. Shadow	Ingress	21	2	36
I. Shadow	Egress W.	12	10	46		III. Transit	Ingress	21	3	6
I. Transit	Egress W.	12	11	6		IV. Shadow	Ingress	21	3	9
IV. Eclipse	Disapp.	12	16	28 6.3		II. Eclipse	Disapp.	21	4	1 34.3
IV. Occult.	Reapp	13	0	0		IV. Transit	Ingress	21	4	20
I. Eclipse	Disapp.	13	5	40 40.3		I. Shadow	Ingress	21	4	49
I. Occult.	Reapp. W.	13	8	17		I. Transit	Ingress	21	4	56
III. Shadow	Ingress	13	22	36		III. Shadow	Egress	21	6	15
III. Transit	Ingress	13	23	50		III. Transit	Egress	21	6	41
II. Eclipse	Disapp.	14	1	26 40.2		II. Occult.	Reapp.	21	7	4
III. Shadow	Egress	14	2	15		I. Shadow	Egress	21	7	8
I. Shadow	Ingress	14	2	54		I. Transit	Egress	21	7	15
I. Transit	Ingress	14	3	13		IV. Shadow	Egress W.	21	7	51
III. Transit	Egress	14	3	25		IV. Transit	Egress W.	21	8	46
II. Occult.	Reapp.	14	4	50		I. Eclipse	Disapp.	22	2	4 16.8
I. Shadow	Egress	14	5	14		I. Occult.	Reapp.	22	4	27
I. Transit	Egress	14	6	31		II. Shadow	Ingress	22	22	36
I. Eclipse	Disapp.	15	0	9 20.8		II. Transit	Ingress	22	22	45
I. Occult.	Reapp.	15	2	43		I. Shadow	Ingress	22	23	17
II. Shadow	Ingress	15	19	59		I. Transit	Ingress	22	23	21
II. Transit	Ingress	15	20	29		II. Shadow	Egress	23	1	30
I. Shadow	Ingress	15	21	23		II. Transit	Egress	23	1	37
I. Transit	Ingress	15	21	39		I. Shadow	Egress	23	1	37
II. Shadow	Egress	15	22	53		I. Transit	Egress	23	1	41
II. Transit	Egress	15	23	21		I. Eclipse	Disapp.	23	20	33 5.4
I. Shadow	Egress	15	23	43		I. Occult.	Reapp.	23	22	53
I. Transit	Egress	15	23	57		III. Eclipse	Disapp.	24	16	31 39.3
I. Eclipse	Disapp.	16	18	38 7.4		II. Occult.	Disapp.	24	17	19

474 JUPITER'S SATELLITES, 1867.

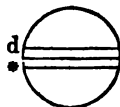
WASHINGTON MEAN TIME.

AUGUST.

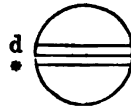
I. Shadow	Ingress	d ^d h ^h m ^m s ^s	24 17 46		II. Eclipse	Reapp. W.	d ^d h ^h m ^m s ^s	28 9 23 1.7
I. Transit	Ingress		24 17 47		III. Transit	Egress W.		28 9 57
I. Shadow	Egress		24 20 5		III. Shadow	Egress W.		28 10 16
I. Transit	Egress		24 20 6		I. Occult.	Disapp.		29 3 51
III. Occult.	Reapp.		24 20 9		I. Eclipse	Reapp.		29 6 14 48.8
II. Occult.	Reapp.		24 20 10		IV. Occult.	Disapp. W.		29 9 45
I. Occult.	Disapp. W.		25 15 0		IV. Eclipse	Reapp. W.		29 15 8 9.0
I. Occult.	Reapp.		25 17 19		II. Transit	Ingress		30 1 1
II. Transit	Ingress W.		26 11 54		I. Transit	Ingress		30 1 5
II. Shadow	Ingress W.		26 11 56		I. Shadow	Ingress		30 1 12
I. Transit	Ingress W.		26 12 13		II. Shadow	Ingress		30 1 15
I. Shadow	Ingress W.		26 12 14		I. Transit	Egress		30 3 24
I. Transit	Egress W.		26 14 32		I. Shadow	Egress		30 3 31
I. Shadow	Egress W.		26 14 34		II. Transit	Egress		30 3 53
II. Transit	Egress W.		26 14 46		II. Shadow	Egress		30 4 8
II. Shadow	Egress W.		26 14 49		I. Occult.	Disapp.		30 22 17
I. Occult.	Disapp. W.		27 9 25		I. Eclipse	Reapp.		31 0 43 38.8
I. Eclipse	Reapp. W.		27 11 46 5.2		I. Transit	Ingress		31 19 31
III. Transit	Ingress		28 6 21		II. Occult.	Disapp.		31 19 32
II. Occult.	Disapp.		28 6 26		I. Shadow	Ingress		31 19 40
III. Shadow	Ingress		28 6 37		III. Occult.	Disapp.		31 19 49
I. Transit	Ingress		28 6 39		I. Transit	Egress		31 21 50
I. Shadow	Ingress		28 6 43		I. Shadow	Egress		31 22 0
I. Transit	Egress W.		28 8 58		II. Eclipse	Reapp.		31 22 40 28.1
I. Shadow	Egress W.		28 9 3					

Phases of the Eclipses of the Satellites for an Inverting Telescope.

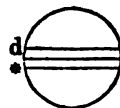
I.



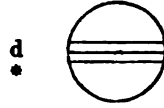
III.



II.



IV.



SEPTEMBER.

III. Eclipse	Reapp.	d ^d h ^h m ^m s ^s	1 0 1 42.7	I. Shadow	Ingress W.	d ^d h ^h m ^m s ^s	2 14 9
I. Occult.	Disapp.		1 16 43	II. Transit	Ingress W.		2 14 10
I. Eclipse	Reapp.		1 19 12 21.2	II. Shadow	Ingress W.		2 14 34
I. Transit	Ingress W.		2 13 56	I. Transit	Egress W.		2 16 16

JUPITER'S SATELLITES, 1867. 475

WASHINGTON MEAN TIME.

SEPTEMBER.

				d	h	m	s				
I.	Shadow	Egress		2	16	28		I.	Occult.	Disapp. W.	10 12 54
II.	Transit	Egress		2	17	2		I.	Eclipse	Reapp. W.	10 15 36 25.1
II.	Shadow	Egress		2	17	28		I.	Transit	Ingress W.	11 10 6
I.	Occult.	Disapp. W.		3	11	11		I.	Shadow	Ingress W.	11 10 32
I.	Eclipse	Reapp. W.		3	13	41	11.9	II.	Occult.	Disapp. W.	11 10 52
I.	Transit	Ingress W.		4	8	22		I.	Transit	Egress W.	11 12 26
I.	Shadow	Ingress W.		4	8	38		I.	Shadow	Egress W.	11 12 51
II.	Occult.	Disapp. W.		4	8	38		III.	Transit	Ingress W.	11 12 54
III.	Transit	Ingress W.		4	9	37		II.	Eclipse	Reapp. W.	11 14 32 2.8
III.	Shadow	Ingress W.		4	10	38		III.	Shadow	Ingress W.	11 14 39
I.	Transit	Egress W.		4	10	42		III.	Transit	Egress	11 16 30
I.	Shadow	Egress W.		4	10	57		III.	Shadow	Egress	11 18 18
II.	Eclipse	Reapp. W.		4	11	57	57.5	I.	Occult.	Disapp. W.	12 7 21
III.	Transit	Egress W.		4	13	13		I.	Eclipse	Reapp. W.	12 10 5 12.0
III.	Shadow	Egress W.		4	14	17		I.	Transit	Ingress	13 4 32
I.	Occult.	Disapp.		5	5	36		I.	Shadow	Ingress	13 5 1
I.	Eclipse	Reapp. W.		5	8	9	57.2	II.	Transit	Ingress	13 5 36
I.	Transit	Ingress		6	2	48		II.	Shadow	Ingress	13 6 32
I.	Shadow	Ingress		6	3	6		I.	Transit	Egress	13 6 52
II.	Transit	Ingress		6	3	18		I.	Shadow	Egress W.	13 7 20
II.	Shadow	Ingress		6	3	54		II.	Transit	Egress W.	13 8 28
I.	Transit	Egress		6	5	8		II.	Shadow	Egress W.	13 9 24
I.	Shadow	Egress		6	5	25		I.	Occult.	Disapp.	14 1 47
II.	Transit	Egress		6	6	10		I.	Eclipse	Reapp.	14 4 34 5.4
II.	Shadow	Egress		6	6	46		I.	Transit	Ingress	14 22 58
IV.	Transit	Ingress		6	18	32		I.	Shadow	Ingress	14 23 30
IV.	Shadow	Ingress		6	21	23		IV.	Occult.	Disapp.	15 0 0
IV.	Transit	Egress		6	23	2		II.	Occult.	Disapp.	15 0 0
I.	Occult.	Disapp.		7	0	2		I.	Transit	Egress	15 1 18
IV.	Shadow	Egress		7	2	2		I.	Shadow	Egress	15 1 49
I.	Eclipse	Reapp.		7	2	38	48.9	III.	Occult.	Disapp.	15 2 37
I.	Transit	Ingress		7	21	14		II.	Eclipse	Reapp.	15 3 50 38.4
I.	Shadow	Ingress		7	21	35		IV.	Occult.	Reapp.	15 4 26
II.	Occult.	Disapp.		7	21	45		IV.	Eclipse	Disapp.	15 4 55 41.3
III.	Occult.	Disapp.		7	23	6		III.	Eclipse	Reapp. W.	15 8 3 39.2
I.	Transit	Egress		7	23	34		IV.	Eclipse	Reapp. W.	15 9 18 47.7
I.	Shadow	Egress		7	23	54		I.	Occult.	Disapp.	15 20 13
II.	Eclipse	Reapp.		8	1	15	28.3	I.	Eclipse	Reapp.	15 23 2 51.2
III.	Eclipse	Reapp.		8	4	2	48.5	I.	Transit	Ingress	16 17 24
I.	Occult.	Disapp.		8	18	28		I.	Shadow	Ingress	16 17 58
I.	Eclipse	Reapp.		8	21	7	32.8	II.	Transit	Ingress	16 18 45
I.	Transit	Ingress		9	15	40		I.	Transit	Egress	16 19 44
I.	Shadow	Ingress *		9	16	3		II.	Shadow	Ingress	16 19 51
II.	Transit	Ingress		9	16	27		I.	Shadow	Egress	16 20 17
II.	Shadow	Ingress		9	17	13		II.	Transit	Egress	16 21 37
I.	Transit	Egress		9	18	0		II.	Shadow	Egress	16 22 43
I.	Shadow	Egress		9	18	22		I.	Occult.	Disapp. W.	17 14 39
II.	Transit	Egress		9	19	19		I.	Eclipse	Reapp.	17 17 31 44.6
II.	Shadow	Egress		9	20	5		I.	Transit	Ingress W.	18 11 50

476 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME:

SEPTEMBER.

I.	Shadow	Ingress	W.	18	12	27	
II.	Occult.	Disapp.	W.	18	13	8	
I.	Transit	Egress	W.	18	14	10	
I.	Shadow	Egress	W.	18	14	46	
III.	Transit	Ingress		18	16	15	
II.	Eclipse	Reapp.		18	17	8	18.4
III.	Shadow	Ingress		18	18	41	
III.	Transit	Egress		18	19	52	
III.	Shadow	Egress		18	22	19	
I.	Occult.	Disapp.	W.	19	9	6	
I.	Eclipse	Reapp.	W.	19	12	0	33.1
I.	Transit	Ingress		20	6	17	
I.	Shadow	Ingress	W.	20	6	56	
II.	Transit	Ingress	W.	20	7	54	
I.	Transit	Egress	W.	20	8	37	
II.	Shadow	Ingress	W.	20	9	16	
I.	Shadow	Egress	W.	20	9	15	
II.	Transit	Egress	W.	20	10	46	
II.	Shadow	Egress	W.	20	12	2	
I.	Occult.	Disapp.		21	3	32	
I.	Eclipse	Reapp.		21	6	29	27.8
I.	Transit	Ingress		22	0	43	
I.	Shadow	Ingress		22	1	25	
II.	Occult.	Disapp.		22	2	16	
I.	Transit	Egress		22	3	3	
I.	Shadow	Egress		22	3	44	
III.	Occult.	Disapp.		22	5	46	
II.	Eclipse	Reapp.		22	6	25	59:1
III.	Eclipse	Reapp.	W.	22	12	4	37.2
I.	Occult.	Disapp.		22	21	52	
I.	Eclipse	Reapp.		23	0	56	15.1
IV.	Transit	Ingress		23	9	5	
IV.	Transit	Egress	W.	23	13	39	
IV.	Shadow	Ingress		23	15	39	
I.	Transit	Ingress		23	19	10	
I.	Shadow	Ingress		23	19	53	
IV.	Shadow	Egress		23	20	14	
II.	Transit	Ingress		23	21	4	
I.	Transit	Egress		23	21	30	
I.	Shadow	Egress		23	22	12	
II.	Shadow	Ingress		23	22	29	
II.	Transit	Egress		23	23	56	
II.	Shadow	Egress		24	1	21	
I.	Occult.	Disapp.		24	16	25	
I.	Eclipse	Reapp.		24	19	27	9.8
I.	Transit	Ingress	W.	25	13	36	
I.	Shadow	Ingress	W.	25	14	22	
II.	Occult.	Disapp.		25	15	24	
I.	Transit	Egress		25	15	56	
I.	Shadow	Egress		25	16	41	
III.	Transit	Ingress		25	19	38	
II.	Eclipse	Reapp.		25	19	43	44.4
III.	Shadow	Ingress		25	22	42	
III.	Transit	Egress		25	23	15	
III.	Shadow	Egress		26	2	20	
I.	Occult.	Disapp.	W.	26	10	52	
I.	Eclipse	Reapp.	W.	26	13	53	59.8
I.	Transit	Ingress	W.	27	8	3	
I.	Shadow	Ingress	W.	27	8	56	
II.	Transit	Ingress	W.	27	10	13	
I.	Transit	Egress	W.	27	10	23	
I.	Shadow	Egress	W.	27	11	9	
II.	Shadow	Ingress	W.	27	11	46	
II.	Transit	Egress	W.	27	13	7	
II.	Shadow	Egress		27	14	46	
I.	Occult.	Disapp.		28	5	18	
I.	Eclipse	Reapp.	W.	28	8	24	55.8
I.	Transit	Ingress		29	2	38	
I.	Shadow	Ingress		29	3	19	
II.	Occult.	Disapp.		29	4	30	
I.	Transit	Egress		29	4	49	
I.	Shadow	Egress		29	5	38	
II.	Eclipse	Reapp.	W.	29	9	1	30.5
III.	Occult.	Disapp.	W.	29	9	11	
III.	Eclipse	Reapp.		29	16	6	4.9
I.	Occult.	Disapp.		29	23	46	
I.	Eclipse	Reapp.		30	2	53	44.5
I.	Transit	Ingress		30	26	56	
I.	Shadow	Ingress		30	21	46	
I.	Transit	Egress		30	23	15	
II.	Transit	Ingress		30	23	26	

JUPITER'S SATELLITES, 1867. 477

WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



III.



II.



IV.



OCTOBER.

		d	h	m	s			d	h	m	s
I.	Shadow	Egress	1	0	7	I.	Occult.	Disapp. W.	5	7	7
II.	Shadow	Ingress	1	1	7	I.	Eclipse	Reapp. W.	5	10	20 28.9
II.	Transit	Egress	1	2	18	I.	Transit	Ingress	6	4	17
II.	Shadow	Egress	1	3	59	I.	Shadow	Ingress	6	5	14
IV.	Occult.	Disapp.	1	14	51	I.	Transit	Egress W.	6	6	36
I.	Occult.	Disapp.	1	18	12	II.	Occult.	Disapp. W.	6	6	52
IV.	Occult.	Reapp.	1	19	18	I.	Shadow	Egress W.	6	7	33
I.	Eclipse	Reapp.	1	21	22 40.5	II.	Eclipse	Reapp. W.	6	11	37 13.4
IV.	Eclipse	Disapp.	1	23	11 11.1	III.	Occult.	Disapp. W.	6	12	40
IV.	Eclipse	Reapp.	2	3	30 0.9	III.	Occult.	Reapp.	6	16	19
I.	Transit	Ingress	2	15	23	III.	Eclipse	Disapp.	6	16	41 6.7
I.	Shadow	Ingress	2	16	17	III.	Eclipse	Reapp.	6	20	7 34.9
I.	Transit	Egress	2	17	42	I.	Occult.	Disapp.	7	1	33
II.	Occult.	Disapp.	2	17	43	I.	Eclipse	Reapp.	7	4	49 20.5
I.	Shadow	Egress	2	18	36	I.	Transit	Ingress	7	22	44
II.	Eclipse	Reapp.	2	22	19 21.5	I.	Shadow	Ingress	7	23	43
III.	Transit	Ingress	2	23	5	I.	Transit	Egress	8	1	3
III.	Transit	Egress	3	2	43	II.	Transit	Ingress	8	1	48
III.	Shadow	Ingress	3	2	44	I.	Shadow	Egress	8	2	2
III.	Shadow	Egress	3	6	21	II.	Shadow	Ingress	8	3	46
I.	Occult.	Disapp. W.	3	12	39	II.	Transit	Egress	8	4	41
I.	Eclipse	Reapp.	3	15	51 31.6	II.	Shadow	Egress W.	8	6	36
I.	Transit	Ingress W.	4	9	59	I.	Occult.	Disapp.	8	20	1
I.	Shadow	Ingress W.	4	10	45	I.	Eclipse	Reapp.	8	23	18 15.5
I.	Transit	Egress W.	4	12	9	I.	Transit	Ingress	9	17	11
II.	Transit	Ingress W.	4	12	36	I.	Shadow	Ingress	9	18	12
I.	Shadow	Egress W.	4	13	4	I.	Transit	Egress	9	19	36
II.	Shadow	Ingress	4	14	27	II.	Occult.	Disapp.	9	20	4
II.	Transit	Egress	4	15	29	I.	Shadow	Egress	9	20	31
II.	Shadow	Egress	4	17	19	IV.	Transit	Ingress	10	0	21

478 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

OCTOBER.

			^d	^h	^m	^s				^d	^h	^m	^s
II.	Eclipse	Reapp.	10	0	55	9.5	III.	Transit	Egress W.	17	9	50	
III.	Transit	Ingress	10	2	36		III.	Shadow	Ingress W.	17	10	47	
IV.	Transit	Egress	10	5	0		III.	Shadow	Egress	17	14	23	
III.	Transit	Egress	10	6	14		I.	Occult.	Disapp.	17	16	18	
III.	Shadow	Ingress W.	10	6	45		I.	Eclipse	Reapp.	17	19	42	46.6
IV.	Shadow	Ingress W.	10	9	56		IV.	Occult.	Disapp. W.	18	6	33	
III.	Shadow	Egress W.	10	10	22		IV.	Occult.	Reapp. W.	18	11	4	
IV.	Shadow	Egress	10	14	27		I.	Transit	Ingress	18	13	28	
I.	Occult.	Disapp.	10	14	28		I.	Shadow	Ingress	18	14	36	
I.	Eclipse	Reapp.	10	17	47	7.4	I.	Transit	Egress	18	15	47	
I.	Transit	Ingress W.	11	11	38		I.	Shadow	Egress	18	16	55	
I.	Shadow	Ingress W.	11	12	41		II.	Transit	Ingress	18	17	27	
I.	Transit	Egress	11	13	57		IV.	Eclipse	Disapp.	18	17	27	21.7
I.	Shadow	Egress	11	15	0		II.	Shadow	Ingress	18	19	44	
II.	Transit	Ingress	11	15	1		II.	Transit	Egress	18	20	20	
II.	Shadow	Ingress	11	17	5		IV.	Eclipse	Reapp.	18	21	41	27.3
II.	Transit	Egress	11	17	54		II.	Shadow	Egress	18	22	36	
II.	Shadow	Egress	11	19	57		I.	Occult.	Disapp. W.	19	10	45	
I.	Occult.	Disapp. W.	12	8	55		I.	Eclipse	Reapp.	19	14	11	45.5
I.	Eclipse	Reapp. W.	12	12	16	5.7	I.	Transit	Ingress W.	20	7	55	
I.	Transit	Ingress	13	6	6		I.	Shadow	Ingress W.	20	9	4	
I.	Shadow	Ingress W.	13	7	9		I.	Transit	Egress W.	20	10	14	
I.	Transit	Egress W.	13	8	25		I.	Shadow	Egress W.	20	11	23	
II.	Occult.	Disapp. W.	13	9	16		II.	Occult.	Disapp. W.	20	11	40	
I.	Shadow	Egress W.	13	9	28		II.	Eclipse	Reapp.	20	16	49	12.3
II.	Eclipse	Reapp.	13	14	13	7.2	III.	Occult.	Disapp.	20	19	54	
III.	Occult.	Disapp.	13	16	15		III.	Occult.	Reapp.	20	23	33	
III.	Occult.	Reapp.	13	19	54		III.	Eclipse	Disapp.	21	0	45	57.2
III.	Eclipse	Disapp.	13	20	43	48.1	III.	Eclipse	Reapp.	21	4	11	19.8
III.	Eclipse	Reapp.	14	0	9	44.1	I.	Occult.	Disapp.	21	5	13	
I.	Occult.	Disapp.	14	3	22		I.	Eclipse	Reapp. W.	21	8	40	37.0
I.	Eclipse	Reapp. W.	14	6	44	56.4	I.	Transit	Ingress	22	2	23	
I.	Transit	Ingress	15	0	33		I.	Shadow	Ingress	22	3	33	
I.	Shadow	Ingress	15	1	38		I.	Transit	Egress	22	4	42	
I.	Transit	Egress	15	2	52		I.	Shadow	Egress	22	5	52	
I.	Shadow	Egress	15	3	57		II.	Transit	Ingress W.	22	6	41	
II.	Transit	Ingress	15	4	14		II.	Shadow	Ingress W.	22	9	3	
II.	Shadow	Ingress W.	15	6	24		II.	Transit	Egress W.	22	9	34	
II.	Transit	Egress W.	15	7	7		II.	Shadow	Egress W.	22	11	55	
II.	Shadow	Egress W.	15	9	16		I.	Occult.	Disapp.	22	23	41	
I.	Occult.	Disapp.	15	21	50		I.	Eclipse	Reapp.	23	3	9	35.0
I.	Eclipse	Reapp.	16	1	13	53.8	I.	Transit	Ingress	23	20	50	
I.	Transit	Ingress	16	19	0		I.	Shadow	Ingress	23	22	2	
I.	Shadow	Ingress	16	20	7		I.	Transit	Egress	23	23	9	
I.	Transit	Egress	16	21	19		I.	Shadow	Egress	24	0	21	
I.	Shadow	Egress	16	22	26		II.	Occult.	Disapp.	24	0	52	
II.	Occult.	Disapp.	16	22	28		II.	Eclipse	Reapp.	24	6	7	18.0
II.	Eclipse	Reapp.	17	3	31	12.1	III.	Transit	Ingress W.	24	9	53	
III.	Transit	Ingress	17	6	12		III.	Transit	Egress	24	13	21	

JUPITER'S SATELLITES, 1867. 479

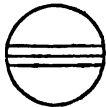
WASHINGTON MEAN TIME.

OCTOBER.

III. Shadow	Ingress	d h m s	24 14 49	III. Eclipse	Disapp.	d h m s	28 4 48 9.8
I. Occult.	Disapp.		24 18 8	I. Occult.	Disapp. W.		28 7 4
III. Shadow	Egress		24 18 24	III. Eclipse	Reapp. W.		28 8 12 58.0
I. Eclipse	Reapp.		24 21 38 28.2	I. Eclipse	Reapp. W.		28 10 36 19.7
I. Transit	Ingress		25 15 18	I. Transit	Ingress		29 4 14
I. Shadow	Ingress		25 16 31	I. Shadow	Ingress		29 5 29
I. Transit	Egress		25 17 37	I. Transit	Egress W.		29 6 33
I. Shadow	Egress		25 18 50	I. Shadow	Egress W.		29 7 48
II. Transit	Ingress		25 19 56	II. Transit	Ingress W.		29 9 11
II. Shadow	Ingress		25 22 22	II. Shadow	Ingress W.		29 11 41
II. Transit	Egress		25 22 49	II. Transit	Egress W.		29 12 4
II. Shadow	Egress		26 1 13	II. Shadow	Egress		29 14 32
I. Occult.	Disapp.		26 12 36	I. Occult.	Disapp.		30 1 32
I. Eclipse	Reapp.		26 16 7 27.6	I. Eclipse	Reapp.		30 5 5 17.7
IV. Transit	Ingress		26 16 36	I. Transit	Ingress		30 22 42
IV. Transit	Egress		26 21 16	I. Shadow	Ingress		30 23 58
IV. Shadow	Ingress		27 4 13	I. Transit	Egress		31 1 1
IV. Shadow	Egress W.		27 8 39	I. Shadow	Egress		31 2 17
I. Transit	Ingress W.		27 9 46	II. Occult.	Disapp.		31 3 22
I. Shadow	Ingress W.		27 11 0	II. Eclipse	Reapp W.		31 8 43 38.9
I. Transit	Egress W.		27 12 5	III. Transit	Ingress		31 13 39
I. Shadow	Egress		27 13 19	III. Transit	Egress		31 17 18
II. Occult.	Disapp.		27 14 7	III. Shadow	Ingress		31 18 51
II. Eclipse	Reapp.		27 19 25 28.1	I. Occult.	Disapp.		31 20 0
III. Occult.	Disapp.		27 23 38	III. Shadow	Egress		31 22 26
III. Occult.	Reapp.		28 3 17	I. Eclipse	Reapp.		31 23 34 11.4

Phases of the Eclipses of the Satellites for an Inverting Telescope.

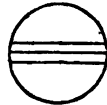
I.



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III.



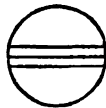
d

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r

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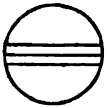
II.



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IV.



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NOVEMBER.

I. Transit	Ingress	d h m s	1 17 10	I. Shadow	Egress	d h m s	1 20 46
I. Shadow	Ingress		1 18 27	II. Transit	Ingress		1 22 27
I. Transit	Egress		1 19 29	II. Shadow	Ingress		2 1 1

480 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

NOVEMBER.

			^d	^h	^m	^s				^d	^h	^m	^s
II.	Transit	Egress	2	1	20			II.	Shadow	Egress	9	6	30
II.	Shadow	Egress	2	3	52			I.	Occult.	Disapp.	9	16	22
I.	Occult.	Disapp.	2	14	29			I.	Eclipse	Reapp.	9	19	58 54.3
I.	Eclipse	Reapp.	2	18	3	10.8		I.	Transit	Ingress	10	13	32
I.	Transit	Ingress	3	11	38			I.	Shadow	Ingress	10	14	52
I.	Shadow	Ingress	3	12	56			I.	Transit	Egress	10	15	51
I.	Transit	Egress	3	13	57			I.	Shadow	Egress	10	17	11
I.	Shadow	Egress	3	15	15			II.	Occult.	Disapp.	10	19	10
II.	Occult.	Disapp.	3	16	38			II.	Eclipse	Reapp.	11	0	38 32.7
II.	Eclipse	Reapp.	3	22	1	55.4		III.	Occult.	Disapp.	11	7	20
IV.	Occult.	Disapp.	3	23	16			I.	Occult.	Disapp.	11	10	51
III.	Occult.	Disapp.	4	3	27			III.	Occult.	Reapp.	11	11	0
IV.	Occult.	Reapp.	4	3	52			III.	Eclipse	Disapp.	11	12	52 3.2
III.	Occult.	Reapp.	4	7	6			I.	Eclipse	Reapp.	11	14	27 46.8
III.	Eclipse	Disapp.	4	8	50	4.7		III.	Eclipse	Reapp.	11	16	15 39.2
I.	Occult.	Disapp.	4	8	57			I.	Transit	Ingress	12	8	0
IV.	Eclipse	Disapp.	4	11	44	34.1		I.	Shadow	Ingress	12	9	20
III.	Eclipse	Reapp.	4	12	14	17.3		IV.	Transit	Ingress	12	9	52
I.	Eclipse	Reapp.	4	12	32	3.2		I.	Transit	Egress	12	10	19
IV.	Eclipse	Reapp.	4	15	53	31.5		I.	Shadow	Egress	12	11	39
I.	Transit	Ingress	5	6	6			II.	Transit	Ingress	12	14	18
I.	Shadow	Ingress	5	7	25			IV.	Transit	Egress	12	14	34
I.	Transit	Egress	5	8	25			II.	Shadow	Ingress	12	16	58
I.	Shadow	Egress	5	9	44			II.	Transit	Egress	12	17	11
II.	Transit	Ingress	5	11	44			II.	Shadow	Egress	12	19	49
II.	Shadow	Ingress	5	14	20			IV.	Shadow	Ingress	12	22	31
II.	Transit	Egress	5	14	37			IV.	Shadow	Egress	13	2	52
II.	Shadow	Egress	5	17	11			I.	Occult.	Disapp.	13	5	19
I.	Occult.	Disapp.	6	3	25			I.	Eclipse	Reapp.	13	8	56 44.7
I.	Eclipse	Reapp.	6	7	1	1.3		I.	Transit	Ingress	14	2	29
I.	Transit	Ingress	7	0	35			I.	Shadow	Ingress	14	3	49
I.	Shadow	Ingress	7	1	54			I.	Transit	Egress	14	4	48
I.	Transit	Egress	7	2	54			I.	Shadow	Egress	14	6	8
I.	Shadow	Egress	7	4	13			II.	Occult.	Disapp.	14	8	27
II.	Occult.	Disapp.	7	5	54			II.	Eclipse	Reapp.	14	13	56 50.9
II.	Eclipse	Reapp.	7	11	20	9.8		III.	Transit	Ingress	14	21	27
III.	Transit	Ingress	7	17	31			I.	Occult.	Disapp.	14	23	48
III.	Transit	Egress	7	21	10			III.	Transit	Egress	15	1	7
I.	Occult.	Disapp.	7	21	54			III.	Shadow	Ingress	15	2	55
III.	Shadow	Ingress	7	22	53			I.	Eclipse	Reapp.	15	3	25 38.4
I.	Eclipse	Reapp.	8	1	29	55.1		III.	Shadow	Egress	15	6	29
III.	Shadow	Egress	8	2	27			I.	Transit	Ingress	15	20	57
I.	Transit	Ingress	8	19	3			I.	Shadow	Ingress	15	22	18
I.	Shadow	Ingress	8	20	23			I.	Transit	Egress	15	23	16
I.	Transit	Egress	8	21	22			I.	Shadow	Egress	16	0	37
I.	Shadow	Egress	8	22	42			II.	Transit	Ingress	16	3	36
II.	Transit	Ingress	9	1	1			II.	Shadow	Ingress	16	6	18
II.	Shadow	Ingress	9	3	39			II.	Transit	Egress	16	6	29
II.	Transit	Egress	9	3	54			II.	Shadow	Egress	16	9	8

JUPITER'S SATELLITES, 1867. 481

WASHINGTON MEAN TIME.

NOVEMBER.

		d	h	m	s			d	h	m	s
I. Occult.	Disapp.	16	18	17		I. Eclipse	Reapp.	23	23	50	19.5
I. Eclipse	Reapp.	16	21	54	37.6	I. Transit	Ingress	24	17	21	
I. Transit	Ingress	17	15	26		I. Shadow	Ingress	24	18	42	
I. Shadow	Ingress	17	16	47		I. Transit	Egress	24	19	40	
I. Transit	Egress	17	17	45		I. Shadow	Egress	24	21	1	
I. Shadow	Egress	17	19	6		II. Occult.	Disapp.	25	0	22	
II. Occult.	Disapp.	17	21	45		II. Eclipse	Reapp. W.	25	5	52	17.0
II. Eclipse	Reapp.	18	3	15	20.1	I. Occult.	Disapp.	25	14	42	
III. Occult.	Disapp.	18	11	19		III. Occult.	Disapp.	25	15	22	
I. Occult.	Disapp.	18	12	46		I. Eclipse	Reapp.	25	18	19	11.6
III. Occult.	Reapp.	18	14	58		III. Occult.	Reapp.	25	19	1	
I. Eclipse	Reapp.	18	16	23	29.9	III. Eclipse	Disapp.	25	20	56	49.3
III. Eclipse	Disapp.	18	16	54	28.4	III. Eclipse	Reapp.	26	0	19	8.5
III. Eclipse	Reapp.	18	20	17	26.4	I. Transit	Ingress	26	11	50	
I. Transit	Ingress W.	19	9	54		I. Shadow	Ingress	26	13	11	
I. Shadow	Ingress	19	11	16		I. Transit	Egress	26	14	9	
I. Transit	Egress	19	12	13		I. Shadow	Egress	26	15	30	
I. Shadow	Egress	19	13	35		II. Transit	Ingress	26	19	33	
II. Transit	Ingress	19	16	55		II. Shadow	Ingress	26	22	15	
II. Shadow	Ingress	19	19	37		II. Transit	Egress	26	22	26	
II. Transit	Egress	19	19	48		II. Shadow	Egress	27	1	5	
II. Shadow	Egress	19	22	27		I. Occult.	Disapp. W.	27	9	11	
I. Occult.	Disapp. W.	20	7	15		I. Eclipse	Reapp.	27	12	48	8.4
I. Eclipse	Reapp. W.	20	10	52	27.5	I. Transit	Ingress W.	28	6	20	
IV. Occult.	Disapp.	20	17	2		I. Shadow	Ingress W.	28	7	40	
IV. Occult.	Reapp.	20	21	41		I. Transit	Egress W.	28	8	39	
I. Transit	Ingress	21	4	23		I. Shadow	Egress W.	28	9	59	
I. Shadow	Ingress W.	21	5	44		II. Occult.	Disapp.	28	13	41	
IV. Eclipse	Disapp. W.	21	6	2	15.7	II. Eclipse	Reapp.	28	19	10	40.9
I. Transit	Egress W.	21	6	42		I. Occult.	Disapp.	29	3	40	
I. Shadow	Egress W.	21	8	3		IV. Transit	Ingress	29	4	8	
IV. Eclipse	Reapp. W.	21	10	5	37.3	III. Transit	Ingress	29	5	32	
II. Occult.	Disapp.	21	11	3		I. Eclipse	Reapp. W.	29	7	17	1.0
II. Eclipse	Reapp.	21	16	33	41.4	•IV. Transit	Egress W.	29	8	49	
III. Transit	Ingress	22	1	27		III. Transit	Egress W.	29	9	12	
I. Occult.	Disapp.	22	1	44		III. Shadow	Ingress	29	11	0	
III. Transit	Egress	22	5	7		III. Shadow	Egress	29	14	32	
I. Eclipse	Reapp.	22	5	21	20.7	IV. Shadow	Ingress	29	16	49	
III. Shadow	Ingress W.	22	6	57		IV. Shadow	Egress	29	21	5	
III. Shadow	Egress W.	22	10	30		I. Transit	Ingress	30	0	49	
I. Transit	Ingress	22	22	52		I. Shadow	Ingress	30	2	9	
I. Shadow	Ingress	23	0	13		I. Transit	Egress	30	3	8	
I. Transit	Egress	23	1	11		I. Shadow	Egress	30	4	28	
I. Shadow	Egress	23	2	32		II. Transit	Ingress W.	30	8	53	
II. Transit	Ingress W.	23	6	14		II. Shadow	Ingress	30	11	34	
II. Shadow	Ingress W.	23	8	56		II. Transit	Egress	30	11	46	
II. Transit	Egress W.	23	9	7		II. Shadow	Egress	30	14	24	
II. Shadow	Egress	23	11	46		I. Occult.	Disapp.	30	22	10	
I. Occult.	Disapp.	23	20	13							

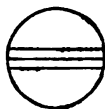
482 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

NOVEMBER.

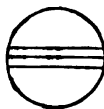
Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.



r

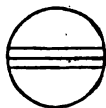
III.



d

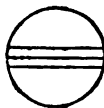
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II.



r

IV.



d

r

DECEMBER.

I. Eclipse	Reapp.	d	h	m	s
I. Transit	Ingress	1	1	45	59.2
I. Shadow	Ingress	1	20	38	
I. Transit	Egress	1	21	38	
I. Shadow	Egress	1	22	57	
II. Occult.	Disapp.	2	3	1	
II. Eclipse	Reapp. W.	2	8	29	22.7
I. Occult.	Disapp.	2	16	38	
III. Occult.	Disapp	2	19	30	
I. Eclipse	Reapp.	2	20	14	50.6
III. Occult.	Reapp.	2	23	9	
III. Eclipse	Disapp.	3	0	59	43.7
III. Eclipse	Reapp.	3	4	21	23.1
I. Transit	Ingress	3	13	48	
I. Shadow	Ingress	3	15	7	
I. Transit	Egress	3	16	7	
I. Shadow	Egress	3	17	26	
II. Transit	Ingress	3	22	14	
II. Shadow	Ingress	4	0	53	
II. Transit	Egress	4	1	7	
II. Shadow	Egress	4	3	43	
I. Occult.	Disapp.	4	11	8	
I. Eclipse	Reapp.	4	14	43	46.5
I. Transit	Ingress W.	5	8	17	
I. Shadow	Ingress W.	5	9	36	
I. Transit	Egress	5	10	36	
I. Shadow	Egress	5	11	55	
II. Occult.	Disapp.	5	16	22	
II. Eclipse	Reapp.	5	21	47	49.3
I. Occult.	Disapp. W.	6	5	37	
I. Eclipse	Reapp. W.	6	9	12	38.7
III. Transit	Ingress W.	6	9	41	
III. Transit	Egress	6	13	21	
III. Shadow	Ingress	6	15	2	
III. Shadow	Egress	6	18	33	
I. Transit	Ingress	7	2	47	
I. Shadow	Ingress	7	4	5	
I. Transit	Egress	7	5	6	
I. Shadow	Egress W.	7	6	24	
II. Transit	Ingress	7	11	35	
IV. Occult.	Disapp.	7	11	42	
II. Shadow	Ingress	7	14	12	
II. Transit	Egress	7	14	28	
IV. Occult.	Reapp.	7	16	24	
II. Shadow	Egress	7	17	2	
I. Occult.	Disapp.	8	0	7	
IV. Eclipse	Disapp.	8	0	20	12.8
I. Eclipse	Reapp.	8	3	41	36.0
IV. Eclipse	Reapp.	8	4	17	27.0
I. Transit	Ingress	8	21	16	
I. Shadow	Ingress	8	22	33	
I. Transit	Egress	8	23	35	
I. Shadow	Egress	9	0	52	
II. Occult.	Disapp. W.	9	5	43	
II. Eclipse	Reapp.	9	11	6	37.3
I. Occult.	Disapp.	9	18	36	
I. Eclipse	Reapp.	9	22	10	28.8
III. Occult.	Disapp.	9	23	41	
III. Occult.	Reapp.	10	3	20	
III. Eclipse	Disapp.	10	5	1	59.8

JUPITER'S SATELLITES, 1867. 483

WASHINGTON MEAN TIME.

DECEMBER.

		d	h	m	s			d	h	m	s
III.	Eclipse	Reapp.	W.	10	8	22	58.4	I.	Transit	Ingress	17 17 44
I.	Transit	Ingress		10	15	46		I.	Shadow	Ingress	17 18 58
I.	Shadow	Ingress		10	17	2		I.	Transit	Egress	17 20 3
I.	Transit	Egress		10	18	5		I.	Shadow	Egress	17 21 17
I.	Shadow	Egress		10	19	21		II.	Transit	Ingress	18 3 39
II.	Transit	Ingress		11	0	56		II.	Shadow	Ingress W.	18 6 9
II.	Shadow	Ingress		11	3	31		II.	Transit	Egress W.	18 6 32
II.	Transit	Egress		11	3	49		II.	Shadow	Egress W.	18 8 58
II.	Shadow	Egress W.		11	6	21		I.	Occult.	Disapp.	18 15 5
I.	Occult.	Disapp.		11	13	6		I.	Eclipse	Reapp.	18 18 34 52.4
I.	Eclipse	Reapp.		11	16	39	21.7	I.	Transit	Ingress	19 12 14
I.	Transit	Ingress		12	10	15		I.	Shadow	Ingress	19 13 27
I.	Shadow	Ingress		12	11	31		I.	Transit	Egress	19 14 33
I.	Transit	Egress		12	12	34		I.	Shadow	Egress	19 15 46
I.	Shadow	Egress		12	13	50		II.	Occult.	Disapp.	19 21 48
II.	Occult.	Disapp.		12	19	4		II.	Eclipse	Reapp.	20 3 2 30.9
II.	Eclipse	Reapp.		13	0	24	6.0	I.	Occult.	Disapp.	20 9 35
I.	Occult.	Disapp. W.		13	7	36		I.	Eclipse	Reapp.	20 13 3 42.6
I.	Eclipse	Reapp.		13	11	8	12.7	III.	Transit	Ingress	20 18 10
III.	Transit	Ingress		13	13	54		III.	Transit	Egress	20 21 49
III.	Transit	Egress		13	17	33		III.	Shadow	Ingress	20 23 6
III.	Shadow	Ingress		13	19	4		III.	Shadow	Egress	21 2 37
III.	Shadow	Egress		13	22	35		I.	Transit	Ingress W.	21 6 43
I.	Transit	Ingress		14	4	45		I.	Shadow	Ingress W.	21 7 56
I.	Shadow	Ingress W.		14	6	0		I.	Transit	Egress W.	21 9 2
I.	Transit	Egress W.		14	7	4		I.	Shadow	Egress	21 10 15
I.	Shadow	Egress W.		14	8	19		II.	Transit	Ingress	21 17 2
II.	Transit	Ingress		14	14	17		II.	Shadow	Ingress	21 19 28
II.	Shadow	Ingress		14	16	50		II.	Transit	Egress	21 19 55
II.	Transit	Egress		14	17	10		II.	Shadow	Egress	21 22 17
II.	Shadow	Egress		14	19	39		I.	Occult.	Disapp.	22 4 4
I.	Occult.	Disapp.		15	2	5		I.	Eclipse	Reapp. W.	22 7 32 37.5
I.	Eclipse	Reapp.		15	5	37	9.1	I.	Transit	Ingress	23 1 13
IV.	Transit	Ingress		15	23	14		I.	Shadow	Ingress	23 2 25
I.	Transit	Ingress		15	23	14		I.	Transit	Egress	23 3 32
I.	Shadow	Ingress		16	0	29		I.	Shadow	Egress	23 4 44
I.	Transit	Egress		16	1	33		II.	Occult.	Disapp.	23 11 11
I.	Shadow	Egress		16	2	48		II.	Eclipse	Reapp.	23 16 21 29.8
IV.	Transit	Egress		16	3	54		I.	Occult.	Disapp.	23 22 34
II.	Occult.	Disapp. W.		16	8	26		I.	Eclipse	Reapp.	24 2 1 26.8
IV.	Shadow	Ingress		16	11	8		IV.	Occult.	Disapp. W.	24 7 10
II.	Eclipse	Reapp.		16	13	43	59.9	III.	Occult.	Disapp. W.	24 8 13
IV.	Shadow	Egress		16	15	18		IV.	Occult.	Reapp.	24 11 53
I.	Occult.	Disapp.		16	20	35		III.	Occult.	Reapp.	24 11 53
I.	Eclipse	Reapp.		17	0	5	58.7	III.	Eclipse	Disapp.	24 13 6 3.9
III.	Occult.	Disapp.		17	3	55		III.	Eclipse	Reapp.	24 16 25 37.7
III.	Occult.	Reapp. W.		17	7	34		IV.	Eclipse	Disapp.	24 18 38 44.9
III.	Eclipse	Disapp. W.		17	9	4	12.2	I.	Transit	Ingress	24 19 43
III.	Eclipse	Reapp.		17	12	24	28.8	I.	Shadow	Ingress	24 20 54

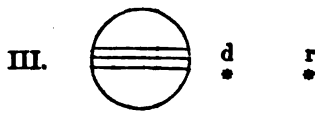
484 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME.

DECEMBER.

I. Transit	Egress	d h m s	24 22 2	I. Transit	Egress	d h m	28 11 3
IV. Eclipse	Reapp.		24 22 29 21.1	I. Shadow	Egress		28 12 10
I. Shadow	Egress		24 23 13	II. Transit	Ingress		28 19 47
II. Transit	Ingress W.		25 6 24	II. Shadow	Ingress		28 22 5
II. Shadow	Ingress W.		25 8 47	II. Transit	Egress		28 22 40
II. Transit	Egress		25 9 17	II. Shadow	Egress		29 0 53
II. Shadow	Egress		25 11 35	I. Occult.	Disapp. W.		29 6 4
I. Occult.	Disapp.		25 17 4	I. Eclipse	Reapp.		29 9 28 2.6
I. Eclipse	Reapp.		25 20 30 19.2	I. Transit	Ingress		30 3 13
I. Transit	Ingress		26 14 13	I. Shadow	Ingress		30 4 20
I. Shadow	Ingress		26 15 23	I. Transit	Egress W.		30 5 33
I. Transit	Egress		26 16 33	I. Shadow	Egress W.		30 6 39
I. Shadow	Egress		26 17 41	II. Occult.	Disapp.		30 13 58
II. Occult.	Disapp.		27 0 34	II. Eclipse	Reapp.		30 18 59 6.3
II. Eclipse	Reapp. W.		27 5 40 1.5	I. Occult.	Disapp.		31 0 34
I. Occult.	Disapp.		27 11 34	I. Eclipse	Reapp.		31 3 56 50.9
I. Eclipse	Reapp.		27 14 59 8.8	III. Occult.	Disapp.		31 12 33
III. Transit	Ingress		27 22 30	III. Occult.	Reapp.		31 16 10
III. Transit	Egress		28 2 8	III. Eclipse	Disapp.		31 17 7 55.5
III. Shadow	Ingress		28 3 9	III. Eclipse	Reapp.		31 20 26 45.3
III. Shadow	Egress W.		28 6 39	I. Transit	Ingress		31 21 43
I. Transit	Ingress W.		28 8 43	I. Shadow	Ingress		31 22 49
I. Shadow	Ingress		28 9 51				

Phases of the Eclipses of the Satellites for an Inverting Telescope.



JUPITER'S SATELLITES, 1867. 485

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE I.

	^h _m		^h _m		^h _m		^h _m
March 1	17 5.0	May 18	14 50.9	Aug. 2	16 30.8	Oct. 17	17 27.3
3	11 35.3	20	9 19.7	4	10 56.9	19	11 55.0
5	6 5.6	22	3 48.4	6	5 23.1	21	6 22.6
7	0 35.9	23	22 17.1	7	23 49.2	23	0 50.4
8	19 6.2	25	16 45.6	9	18 15.4	24	19 18.2
10	13 36.4	27	11 14.1	11	12 41.4	26	13 46.1
12	8 6.6	29	5 42.6	13	7 7.6	28	8 14.0
14	2 36.7	31	0 11.0	15	1 33.5	30	2 42.0
15	21 6.9	June 1	18 39.3	16	19 59.6	31	21 10.1
17	15 37.1	3	13 7.6	18	14 25.5	Nov. 2	15 38.3
19	10 7.2	5	7 35.8	20	8 51.5	4	10 6.5
21	4 37.3	7	2 4.0	22	3 17.4	6	4 35.0
22	23 7.3	8	20 32.0	23	21 43.4	7	23 3.4
24	17 37.4	10	15 0.0	25	16 9.3	9	17 32.0
26	12 7.4	12	9 28.0	27	10 35.3	11	12 0.5
28	6 37.4	14	3 55.9	29	5 1.4	13	6 29.2
30	1 7.3	15	22 23.6	30	23 27.4	15	0 57.8
31	19 37.2	17	16 51.5	Sept. 1	17 53.4	16	19 26.6
April 2	14 7.0	19	11 19.2	3	12 19.6	18	13 55.4
4	8 36.9	21	5 46.8	5	6 45.7	20	8 24.3
6	3 6.7	23	0 14.3	7	1 11.8	22	2 53.3
7	21 36.5	24	18 41.8	8	19 38.0	23	21 22.4
9	16 6.3	26	13 9.2	10	14 4.2	25	15 51.5
11	10 36.0	28	7 36.6	12	8 30.4	27	10 20.6
13	5 5.7	30	2 3.8	14	2 56.7	29	4 49.8
14	23 35.4	July 1	20 31.1	15	21 23.0	30	23 19.1
16	18 5.1	3	14 58.2	17	15 49.4	Dec. 2	17 48.4
18	12 34.6	5	9 25.3	19	10 15.7	4	12 17.8
20	7 4.1	7	3 52.3	21	4 42.2	6	6 47.2
22	1 33.6	8	22 19.4	22	23 8.6	8	1 16.8
23	20 3.1	10	16 46.3	24	17 35.3	9	19 46.2
25	14 32.6	12	11 13.2	26	12 1.9	11	14 15.9
27	9 1.9	14	5 39.9	28	6 28.6	13	8 45.4
29	3 31.3	16	0 6.7	30	0 55.4	15	3 15.2
30	22 0.5	17	18 33.4	Oct. 1	19 22.3	16	21 44.8
May 2	16 29.8	19	12 59.9	3	13 49.3	18	16 14.6
4	10 59.0	21	7 26.4	5	8 16.3	20	10 44.4
6	5 28.2	23	1 53.0	7	2 43.4	22	5 14.3
7	23 57.3	24	20 19.3	8	21 10.5	23	23 44.2
9	18 26.4	26	14 45.8	10	15 37.7	25	18 14.2
11	12 55.3	28	9 12.1	12	10 5.1	27	12 44.1
13	7 24.3	30	3 38.4	14	4 32.4	29	7 14.1
15	1 53.2	31	22 4.6	15	22 59.8	31	1 44.2
16	20 22.1						

SATELLITE II.

	^h _m		^h _m		^h _m		^h _m
March 3	16 18.9	April 1	3 38.7	April 29	14 39.6	May 28	1 13.9
7	5 44.2	4	17 2.4	May 3	4 0.3	31	14 31.0
10	19 10.2	8	6 26.1	6	17 21.0	June 4	3 47.6
14	8 35.0	11	19 48.9	10	6 40.8	7	17 3.4
17	22 0.7	15	9 12.1	13	20 0.6	11	6 19.0
21	11 25.1	18	22 34.2	17	9 19.5	14	19 33.7
25	0 50.1	22	11 56.6	20	22 38.2	18	8 48.2
28	14 14.2	26	1 18.1	24	11 56.3	21	22 1.9

486 JUPITER'S SATELLITES, 1867.

WASHINGTON MEAN TIME OF GEOCENTRIC SUPERIOR CONJUNCTION.

SATELLITE II.

June 25	^h 11 ^m 15.0	Aug. 14	^h 3 ^m 25.2	Oct. 2	^h 19 ^m 10.2	Nov. 17	^h 23 ^m 12.1
29	0 27.8	17	16 31.8	6	8 20.4	21	12 30.3
July 2	13 39.7	21	5 38.4	9	21 31.4	25	1 49.1
6	2 51.0	24	18 44.8	13	10 42.8	28	15 8.3
9	16 1.9	28	7 51.4	16	23 55.1	Dec. 2	4 28.3
13	6 12.2	31	20 58.0	20	13 7.7	5	17 46.5
16	18 21.6	Sept. 4	10 3.6	24	2 21.2	9	7 9.5
20	7 31.3	7	23 11.6	27	15 35.1	12	20 29.7
23	20 40.0	11	12 17.8	31	4 50.0	16	9 51.7
27	9 48.6	15	1 26.3	Nov. 3	18 5.1	19	23 14.6
30	22 56.5	18	14 34.3	7	7 21.0	23	12 37.5
Aug. 3	12 4.2	22	3 42.6	10	20 37.4	27	2 0.3
7	1 11.3	26	16 51.3	14	9 54.5	30	15 23.8
10	14 18.5	29	6 0.5				

SATELLITE III.

March 5	^h 20 ^m 22.9	May 23	^h 19 ^m 44.1	Aug. 10	^h 11 ^m 47.8	Oct. 28	^h 1 ^m 27.7
13	0 51.3	30	23 44.4	17	15 5.0	Nov. 4	5 16.4
20	5 18.5	June 7	3 40.2	24	18 21.5	11	9 10.1
27	9 44.7	14	7 31.8	31	21 37.3	18	13 6.8
April 3	14 8.5	21	11 20.2	Sept. 8	0 54.4	25	17 11.8
10	18 29.5	28	15 1.8	15	4 15.2	Dec. 2	21 19.5
17	22 49.8	July 5	18 40.4	22	7 34.7	10	1 30.3
25	3 6.5	12	22 13.8	29	11 0.0	17	5 44.5
May 2	7 20.6	20	1 42.9	Oct. 6	14 29.6	24	10 1.7
9	11 31.7	27	5 7.6	13	18 4.7	31	14 21.6
16	15 40.0	Aug. 3	8 28.8	20	21 43.6		

SATELLITE IV.

March 15	^h 5 ^m 49.5	June 7	^h 6 ^m 48.4	Aug. 29	^h 11 ^m 57.1	Nov. 4	^h 1 ^m 34.1
April 1	2 17.8	23	23 56.6	Sept. 15	2 13.4	20	19 21.5
17	22 21.3	July 10	16 5.3	Oct. 1	17 4.8	Dec. 7	14 2.7
May 4	17 54.1	27	7 17.9	18	8 48.1	24	9 31.5
21	12 45.4	Aug. 12	21 48.4				

Factors by which x' and y' in the following Table must be multiplied to obtain the coördinates x and y for any time.

p — the inclination of the northern semi-minor axis of the apparent ellipse to the circle of declination; + East, — West.

x and y at the time of the visible phase of every fourth eclipse for the I^a, of every second eclipse for the II^d, and of every eclipse for the III^d and IVth Satellites.

JUPITER'S SATELLITES, 1867. 487

SATELLITE I.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x' .	Factor for y' .	p .	z .	y .		Factor for x' .	Factor for y' .	p .	z .	y .
March 1	0.871	+0.098	-20° 43.5	-22 ^u	+0 ^u	Aug. 4	1.279	+0.457	-23° 44.4	-34 ^u	+3 ^u
8	0.878	0.048	21 8.0	24	0	11	1.291	0.458	23 36.7	31	3
15	0.886	0.068	21 30.8	26	0	18	1.299	0.454	23 27.9	-27	3
22	0.895	0.088	21 52.1	28	1	25	1.303	0.447	23 18.3	..	3
30	0.906	0.108	22 11.7	29	1	Sept. 1	1.300	0.437	23 8.7	+27	3
April 6	0.919	+0.129	-22 20.6	-31	+1	8	1.292	+0.424	-22 58.9	+32	+3
13	0.934	0.150	22 45.8	33	1	15	1.280	0.407	22 49.5	35	3
20	0.951	0.172	23 0.4	35	1	22	1.265	0.389	22 40.9	37	2
27	0.968	0.194	23 13.5	36	1	30	1.247	0.372	22 33.6	39	2
May 4	0.986	0.217	23 25.1	38	1	Oct. 7	1.226	0.355	22 27.9	41	2
11	1.006	+0.240	-23 35.2	-39	+1	14	1.201	+0.338	-22 24.0	+42	+2
18	1.028	0.263	23 43.6	40	2	21	1.177	0.322	22 22.2	43	2
25	1.051	0.286	23 50.2	41	2	28	1.152	0.308	22 22.5	43	2
June 1	1.075	0.309	23 55.6	42	2	Nov. 4	1.126	0.298	22 24.9	43	2
8	1.100	0.332	23 59.9	43	2	11	1.100	0.290	22 20.3	43	2
15	1.125	+0.355	-24 2.8	-43	+2	18	1.074	+0.283	-22 35.5	+42	+2
23	1.150	0.378	24 4.2	43	2	25	1.049	0.277	22 43.5	41	2
30	1.175	0.398	24 4.3	43	2	Dec. 2	1.026	0.274	22 52.9	40	2
July 7	1.200	0.415	24 3.0	42	3	9	1.005	0.274	23 3.3	38	2
14	1.224	0.430	24 0.3	41	3	16	0.985	0.276	23 14.7	37	2
21	1.245	+0.443	-23 56.3	-39	+3	23	0.967	+0.279	-23 26.8	+35	+2
28	1.263	+0.452	-23 51.0	-37	+3	31	0.950	+0.283	-23 30.3	+32	+2

SATELLITE II.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.		Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.	
	Factor for x' .	Factor for y' .	p .	z .	y .		Factor for x' .	Factor for y' .	p .	z .	y .
March 3	0.873	+0.045	-21° 16.5	-27 ^u	+0 ^u	Aug. 7	1.285	+0.461	-24° 4.8	-38 ^u	+5 ^u
10	0.880	0.063	21 40.6	30	1	14	1.295	0.459	23 56.8	33	5
17	0.888	0.083	22 2.9	33	1	21	1.301	0.454	23 47.9	-27	5
25	0.898	0.104	22 23.4	36	1	28	1.303	0.446	23 38.3	..	5
April 1	0.910	0.126	22 42.3	38	1	Sept. 4	1.298	0.434	23 28.6	+31	5
8	0.924	+0.148	-22 59.5	-41	+2	11	1.280	+0.419	-23 18.9	+37	+5
15	0.939	0.170	23 15.2	44	2	18	1.275	0.402	23 9.7	42	5
22	0.954	0.192	23 29.2	46	2	25	1.258	0.385	23 1.5	47	5
29	0.971	0.214	23 41.4	48	3	Oct. 2	1.238	0.369	22 54.9	50	4
May 6	0.991	0.237	23 51.9	50	3	9	1.216	0.353	22 50.0	52	4
13	1.013	+0.260	-24 1.8	-52	+3	16	1.191	+0.338	-22 47.0	+54	+4
20	1.035	0.283	24 9.2	54	3	24	1.166	0.324	22 46.0	55	4
28	1.058	0.306	24 15.7	56	4	31	1.140	0.313	22 47.1	56	4
June 4	1.082	0.329	24 20.6	57	4	Nov. 7	1.114	0.304	22 50.2	56	4
11	1.107	0.351	24 24.1	57	4	14	1.089	0.298	22 55.2	55	4
18	1.132	+0.373	-24 26.3	-57	+4	21	1.064	+0.295	-23 2.0	+54	+4
25	1.157	0.393	24 27.2	56	5	28	1.039	0.293	23 10.4	53	4
July 2	1.182	0.412	24 26.8	55	5	Dec. 5	1.016	0.293	23 20.1	51	4
9	1.207	0.429	24 25.0	53	5	12	0.996	0.294	23 30.8	49	4
16	1.231	0.443	24 21.9	50	5	19	0.977	0.296	23 42.2	47	4
23	1.253	+0.453	-24 17.5	-47	+5	27	0.960	+0.298	-23 54.2	+45	+4
30	1.271	+0.459	-24 11.7	-43	+5						

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SATELLITE III.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x .	Factor for y .	p .	Disappearance.		Reappearance.	
				z .	y .	z .	y .
March 5	0.875	-0.011	-20° 52.0	-35	+0	..	+0
12	0.883	+0.006	21 16.2	40	0	..	0
20	0.892	0.024	21 38.7	44	0	..	0
27	0.902	0.043	21 50.5	48	1	..	1
April 3	0.913	0.062	22 18.6	52	1	-20	1
10	0.927	+0.082	-22 36.0	-56	+1	-24	+1
17	0.944	0.102	22 51.8	60	2	27	2
24	0.961	0.122	23 5.8	64	2	30	2
May 2	0.979	0.142	23 18.2	68	2	33	2
9	0.999	0.163	23 28.9	71	3	36	3
16	1.021	+0.184	-23 38.1	-74	+3	-38	+3
23	1.044	0.206	23 45.7	76	3	40	3
30	1.068	0.227	23 51.9	78	4	41	4
June 7	1.093	0.248	23 56.6	79	4	41	4
14	1.118	0.269	23 59.8	80	5	40	5
21	1.144	+0.289	-24 1.6	-79	+5	-38	+5
28	1.171	0.306	24 2.0	78	5	36	5
July 5	1.196	0.321	24 1.0	75	6	33	6
12	1.220	0.336	23 58.5	71	6	-28	6
20	1.242	0.346	23 54.6	66	6	..	6
27	1.261	+0.354	-23 49.4	-59	+6	..	+6
Aug. 3	1.277	0.360	23 42.8	51	6	..	6
10	1.290	0.361	23 34.9	43	6	..	6
17	1.299	0.358	23 26.0	34	6	..	6
24	1.302	0.352	23 16.3	-24	6	..	6
31	1.300	+0.342	-23 6.0	..	+6	+39	+6
Sept. 8	1.293	0.330	22 56.1	..	6	41	6
15	1.282	0.316	22 46.5	..	5	50	5
22	1.268	0.300	22 37.5	..	5	58	5
29	1.249	0.284	22 29.8	..	5	64	5
Oct. 6	1.225	+0.268	-22 23.9	+27	+5	+69	+5
13	1.201	0.254	22 19.8	32	4	74	4
20	1.177	0.241	22 17.9	36	4	77	4
28	1.152	0.230	22 18.1	39	4	78	4
Nov. 4	1.126	0.220	22 20.5	41	4	79	4
11	1.100	+0.212	-22 25.2	+41	+3	+78	+3
18	1.075	0.207	22 31.5	41	3	76	3
25	1.050	0.203	22 39.7	40	3	74	3
Dec. 2	1.026	0.202	22 49.2	38	3	72	3
10	1.004	0.203	23 0.3	36	3	69	3
17	0.985	+0.205	-23 12.0	+33	+3	+66	+3
24	0.967	0.209	23 24.4	30	3	62	3
31	0.950	+0.214	-23 37.4	+26	+4	+58	+4

SATELLITE IV.

Date, 1867.	AT GEOCENTRIC SUPERIOR CONJUNCTION.			AT TIME OF ECLIPSE.			
	Factor for x' .	Factor for y' .	p .	Disappearance.		Reappearance.	
				x .	y .	x .	y .
March 15	0.885	+0.008	-21° 12.7	- 59"	+ 0"	- 27"	+ 0"
31	0.910	0.043	22 1.7	77	1	44	1
April 17	0.944	0.081	22 41.3	93	3	60	3
May 4	0.984	0.121	23 11.8	108	4	73	4
21	1.038	0.159	23 33.2	120	6	83	6
June 7	1.092	+0.204	-23 46.4	-125	+ 7	- 86	+ 7
23	1.154	0.244	23 51.7	122	8	82	8
July 10	1.213	0.277	23 49.2	110	10	68	10
27	1.261	0.299	23 38.9	86	10	- 43	10
Aug. 12	1.294	0.303	23 21.5	- 53	10	..	10
29	1.301	+0.292	-22 59.1	..	+10	+ 31	+10
Sept. 15	1.282	0.268	22 35.2	+ 26	9	69	9
Oct. 1	1.243	0.238	22 17.1	57	8	98	8
18	1.188	0.209	22 7.5	78	7	115	7
Nov. 4	1.126	0.187	22 9.6	87	6	122	6
20	1.065	+0.173	-22 22.9	+ 86	+ 6	+118	+ 6
Dec. 7	1.014	0.170	22 45.4	79	6	109	6
24	0.967	+0.174	-23 13.7	+ 67	+ 6	+ 95	+ 6

SATELLITE I.

COORDINATES IN THE MEAN APPARENT ELLIPSE, DESCRIBED BY THE
SATELLITE, AND FOR THE MEAN DISTANCE OF JUPITER
FROM THE SUN, FOR THE TIME (t) AFTER GEO-
CENTRIC SUPERIOR CONJUNCTION.

t	x'	y'	t	x'	y'	t	x'	y'
d h m			d h m			d h m		
0 0 0	+ 0.0	+ 6.6	0 5 20	+ 77.5	+ 4.7	0 10 40	+109.1	- 0.1
0 0 20	5.4	6.6	0 5 40	81.2	4.4	0 11 0	109.0	0.4
0 0 40	10.8	6.6	0 6 0	84.7	4.2	0 11 20	108.6	0.7
0 1 0	16.1	6.6	0 6 20	88.0	3.9	0 11 40	107.9	1.0
0 1 20	21.4	6.5	0 6 40	91.1	3.7	0 12 0	106.9	1.3
0 1 40	+ 26.6	+ 6.4	0 7 0	+ 94.0	+ 3.4	0 12 20	+105.7	- 1.7
0 2 0	31.8	6.3	0 7 20	96.6	3.1	0 12 40	104.2	2.0
0 2 20	36.9	6.2	0 7 40	99.0	2.8	0 13 0	102.5	2.3
0 2 40	42.0	6.1	0 8 0	101.1	2.5	0 13 20	100.5	2.6
0 3 0	46.9	6.0	0 8 20	103.0	2.2	0 13 40	98.3	2.9
0 3 20	+ 51.7	+ 5.8	0 8 40	+104.7	+ 1.9	0 14 0	+ 95.8	- 3.2
0 3 40	56.4	5.7	0 9 0	106.1	1.6	0 14 20	93.1	3.5
0 4 0	60.9	5.5	0 9 20	107.3	1.3	0 14 40	90.2	3.7
0 4 20	65.3	5.3	0 9 40	108.1	0.9	0 15 0	87.1	4.0
0 4 40	69.5	5.1	0 10 0	108.7	0.6	0 15 20	83.7	4.3
0 5 0	+ 73.6	+ 4.9	0 10 20	+109.1	+ 0.3	0 15 40	+ 80.1	- 4.5

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COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE I.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
0 16 0	+ 76.4	- 4.7	1 1 40	- 66.6	- 5.2	1 11 0	- 97.6	+ 3.0
0 16 20	72.5	5.0	1 2 0	70.8	5.0	1 11 20	95.1	3.3
0 16 40	68.4	5.2	1 2 20	74.8	4.8	1 11 40	92.3	3.5
0 17 0	64.1	5.4	1 2 40	78.6	4.6	1 12 0	89.3	3.8
0 17 20	59.6	5.5	1 3 0	82.2	4.4	1 12 20	86.1	4.1
0 17 40	+ 55.0	- 5.7	1 3 20	- 85.6	- 4.1	1 12 40	- 82.7	+ 4.3
0 18 0	50.3	5.9	1 3 40	88.9	3.8	1 13 0	79.1	4.6
0 18 20	45.5	6.0	1 4 0	91.9	3.6	1 13 20	75.3	4.8
0 18 40	40.5	6.1	1 4 20	94.7	3.3	1 13 40	71.3	5.0
0 19 0	35.5	6.3	1 4 40	97.3	3.0	1 14 0	67.1	5.2
0 19 20	+ 30.4	- 6.4	1 5 0	- 99.6	- 2.7	1 14 20	- 62.8	+ 5.4
0 19 40	25.2	6.4	1 5 20	101.7	2.4	1 14 40	58.3	5.6
0 20 0	19.9	6.5	1 5 40	103.5	2.1	1 15 0	53.7	5.8
0 20 20	14.6	6.6	1 6 0	105.1	1.8	1 15 20	49.0	5.9
0 20 40	9.2	6.6	1 6 20	106.4	1.5	1 15 40	44.1	6.1
0 21 0	+ 3.8	- 6.6	1 6 40	- 107.5	- 1.3	1 16 0	- 39.1	+ 6.3
0 21 20	- 1.5	6.6	1 7 0	108.3	0.8	1 16 20	34.0	6.3
0 21 40	6.9	6.6	1 7 20	108.8	0.5	1 16 40	28.9	6.4
0 22 0	12.3	6.6	1 7 40	109.1	- 0.3	1 17 0	23.7	6.5
0 22 20	17.6	6.5	1 8 0	109.1	+ 0.1	1 17 20	18.4	6.5
0 22 40	- 22.9	- 6.5	1 8 20	- 108.9	+ 0.5	1 17 40	- 13.0	+ 6.6
0 23 0	28.1	6.4	1 8 40	108.4	0.8	1 18 0	7.7	6.6
0 23 20	33.3	6.3	1 9 0	107.6	1.1	1 18 20	- 2.3	6.6
0 23 40	38.4	6.3	1 9 20	106.6	1.4	1 18 40	+ 3.1	6.6
1 0 0	43.4	6.1	1 9 40	105.3	1.8	1 19 0	8.5	6.6
1 0 20	- 48.3	- 5.9	1 10 0	- 103.8	+ 2.1	1 19 20	+ 13.8	+ 6.6
1 0 40	53.1	5.8	1 10 20	102.0	2.4	1 19 40	19.1	6.5
1 1 0	57.7	5.6	1 10 40	- 99.9	+ 2.7	1 20 0	+ 24.4	+ 6.5
1 1 20	- 62.2	- 5.4						

SATELLITE II.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
0 0 0	+ 0.0	+ 12.2	0 10 40	+ 122.9	+ 8.6	0 21 20	+ 173.8	- 0.0
0 0 40	8.5	12.3	0 11 20	128.8	8.2	0 22 0	173.6	0.6
0 1 20	17.0	12.1	0 12 0	134.4	7.7	0 22 40	172.9	1.3
0 2 0	25.5	12.1	0 12 40	139.6	7.3	0 23 20	171.8	1.8
0 2 40	33.9	12.0	0 13 20	144.5	6.8	1 0 0	170.4	2.4
0 3 20	+ 42.2	+ 11.8	0 14 0	+ 149.0	+ 6.3	1 0 40	+ 168.5	- 3.0
0 4 0	50.5	11.7	0 14 40	153.2	5.7	1 1 20	166.2	3.5
0 4 40	58.6	11.5	0 15 20	157.0	5.2	1 2 0	163.5	4.1
0 5 20	66.5	11.3	0 16 0	160.5	4.7	1 2 40	160.4	4.7
0 6 0	74.3	11.0	0 16 40	163.6	4.1	1 3 20	157.0	5.2
0 6 40	+ 81.9	+ 10.8	0 17 20	+ 166.3	+ 3.5	1 4 0	+ 153.2	- 5.8
0 7 20	89.4	10.5	0 18 0	168.6	3.0	1 4 40	149.0	6.3
0 8 0	96.5	10.1	0 18 40	170.5	2.4	1 5 20	144.4	6.8
0 8 40	103.6	9.8	0 19 20	171.9	1.8	1 6 0	139.5	7.3
0 9 20	110.3	9.4	0 20 0	172.9	1.2	1 6 40	134.2	7.7
0 10 0	+ 116.7	+ 9.0	0 20 40	+ 173.6	+ 0.6	1 7 20	+ 128.6	- 8.2

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COORDINATES IN THE MEAN APPARENT ELLIPSE

SATELLITE II.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d. h. m.	^h	^m	d. h. m.	^h	^m	d. h. m.	^h	^m
1 8 0	+122.7	- 8.6	2 3 20	-103.7	- 9.8	2 22 0	-156.9	+ 5.2
1 8 40	116.5	9.0	2 4 0	110.4	9.4	2 22 40	153.0	5.8
1 9 20	110.1	9.4	2 4 40	116.8	9.0	2 23 20	148.8	6.3
1 10 0	103.4	9.8	2 5 20	123.0	8.6	3 0 0	144.2	6.8
1 10 40	96.4	10.1	2 6 0	128.9	8.2	3 0 40	139.3	7.3
1 11 20	+ 89.2	-10.5	2 6 40	-134.5	- 7.7	3 1 20	-134.1	+ 7.8
1 12 0	81.7	10.8	2 7 20	139.7	7.2	3 2 0	128.5	8.2
1 12 40	74.1	11.0	2 8 0	144.6	6.7	3 2 40	122.6	8.6
1 13 20	66.3	11.3	2 8 40	149.1	6.2	3 3 20	116.4	9.0
1 14 0	58.3	11.5	2 9 20	153.3	5.7	3 4 0	109.9	9.4
1 14 40	+ 50.2	-11.7	2 10 0	-157.1	- 5.2	3 4 40	-103.1	+ 9.8
1 15 20	42.0	11.8	2 10 40	160.6	4.6	3 5 20	96.1	10.1
1 16 0	33.7	12.0	2 11 20	163.7	4.1	3 6 0	88.9	10.5
1 16 40	25.3	12.1	2 12 0	166.4	3.5	3 6 40	81.5	10.8
1 17 20	16.3	12.1	2 12 40	168.6	2.9	3 7 20	73.9	11.0
1 18 0	+ 8.3	-12.2	2 13 20	-170.4	- 2.3	3 8 0	- 66.1	+11.3
1 18 40	- 0.2	12.2	2 14 0	171.9	1.8	3 8 40	58.1	11.5
1 19 20	8.8	12.2	2 14 40	173.0	1.2	3 9 20	50.0	11.7
1 20 0	17.3	12.1	2 15 20	173.6	- 0.6	3 10 0	41.8	11.8
1 20 40	25.7	12.1	2 16 0	173.8	+ 0.0	3 10 40	33.5	12.0
1 21 20	- 34.1	-12.0	2 16 40	-173.6	+ 0.6	3 11 20	- 25.1	+12.1
1 22 0	42.4	11.8	2 17 20	172.9	1.2	3 12 0	16.6	12.1
1 22 40	50.6	11.7	2 18 0	171.8	1.8	3 12 40	- 8.1	12.2
1 23 20	58.7	11.5	2 18 40	170.3	2.4	3 13 20	+ 0.4	12.2
2 0 0	66.7	11.3	2 19 20	168.4	3.0	3 14 0	9.0	12.2
2 0 40	- 74.5	-11.0	2 20 0	-168.2	+ 3.5	3 14 40	+ 17.5	+12.1
2 1 20	82.1	10.7	2 20 40	163.5	4.1	3 15 20	26.0	12.1
2 2 0	89.5	10.4	2 21 20	-160.4	+ 4.7	3 16 0	+ 34.4	+12.0
2 2 40	- 96.7	-10.1						

SATELLITE III.

<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>	<i>t</i>	<i>z'</i>	<i>y'</i>
d. h. m.	^h	^m	d. h. m.	^h	^m	d. h. m.	^h	^m
0 0 0	+ 0.0	+17.4	0 21 20	+194.7	+12.4	1 18 40	+277.2	+ 0.2
0 1 20	13.5	17.4	0 22 40	204.1	11.8	1 20 0	277.0	- 0.6
0 2 40	26.9	17.3	1 0 0	213.0	11.1	1 21 20	276.2	1.5
0 4 0	40.3	17.3	1 1 20	221.4	10.5	1 22 40	274.7	2.3
0 5 20	53.6	17.1	1 2 40	229.3	9.8	2 0 0	272.6	3.8
0 6 40	+ 66.8	+16.9	1 4 0	+236.6	+ 9.1	2 1 20	+269.8	- 4.0
0 8 0	79.8	16.7	1 5 20	243.3	8.3	2 2 40	266.4	4.8
0 9 20	92.7	16.4	1 6 40	249.5	7.6	2 4 0	262.3	5.6
0 10 40	105.3	16.1	1 8 0	255.1	6.8	2 5 20	257.6	6.4
0 12 0	117.6	15.8	1 9 20	260.0	6.0	2 6 40	252.3	7.2
0 13 20	+129.7	+15.4	1 10 40	+264.3	+ 5.2	2 8 0	+246.4	- 8.0
0 14 40	141.5	15.0	1 12 0	268.0	4.4	2 9 20	240.0	8.7
0 16 0	153.0	14.5	1 13 20	271.1	3.6	2 10 40	233.0	9.4
0 17 20	164.1	14.0	1 14 40	273.6	2.7	2 12 0	225.4	10.1
0 18 40	174.7	13.5	1 16 0	275.5	1.9	2 13 20	217.3	10.8
0 20 0	+184.9	+13.0	1 17 20	+276.7	+ 1.1	2 14 40	+208.6	-11.5

492 JUPITER'S SATELLITES, 1867.

COÖRDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE III.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h. m.	"	"	d. h. m.	"	"	d. h. m.	"	"
2 16 0	+199.5	-12.1	4 6 40	-158.4	-14.3	5 20 0	-255.1	+ 6.8
2 17 20	189.9	12.7	4 8 0	169.3	13.8	5 21 20	249.5	7.6
2 18 40	179.9	13.3	4 9 20	179.8	13.3	5 22 40	243.3	8.3
2 20 0	169.4	13.8	4 10 40	189.9	12.7	6 0 0	236.6	9.1
2 21 20	158.5	14.3	4 12 0	199.5	12.1	6 1 20	229.3	9.8
2 22 40	+147.2	-14.3	4 13 20	-208.6	-11.5	6 2 40	-221.4	+10.5
3 0 0	135.6	15.2	4 14 40	217.3	10.8	6 4 0	213.0	11.1
3 1 20	123.7	15.6	4 16 0	225.5	10.1	6 5 20	204.1	11.8
3 2 40	111.5	16.0	4 17 20	233.1	9.4	6 6 40	194.7	12.4
3 4 0	99.0	16.3	4 18 40	240.1	8.7	6 8 0	184.9	13.0
3 5 20	+ 86.3	-16.6	4 20 0	-246.5	- 8.0	6 9 20	-174.7	+13.5
3 6 40	73.3	16.8	4 21 20	252.3	7.2	6 10 40	164.1	14.0
3 8 0	60.2	17.0	4 22 40	257.6	6.4	6 12 0	153.0	14.5
3 9 20	47.0	17.2	5 0 0	262.3	5.6	6 13 20	141.5	15.0
3 10 40	33.6	17.3	5 1 20	266.4	4.8	6 14 40	129.7	15.4
3 12 0	+ 20.2	-17.4	5 2 40	-269.8	- 4.0	6 16 0	-117.6	+15.8
3 13 20	+ 6.7	17.4	5 4 0	272.6	3.2	6 17 20	105.2	16.1
3 14 40	- 6.8	17.4	5 5 20	274.7	2.3	6 18 40	92.6	16.4
3 16 0	20.3	17.4	5 6 40	276.2	1.5	6 20 0	79.8	16.7
3 17 20	33.7	17.3	5 8 0	277.0	- 0.6	6 21 20	66.8	16.9
3 18 40	- 47.1	-17.2	5 9 20	-277.2	+ 0.2	6 22 40	- 53.6	+17.1
3 20 0	60.3	17.0	5 10 40	276.7	1.1	7 0 0	40.3	17.2
3 21 20	73.4	16.8	5 12 0	275.5	1.9	7 1 20	26.9	17.3
3 22 40	86.3	16.6	5 13 20	273.7	2.7	7 2 40	- 13.4	17.4
4 0 0	99.0	16.3	5 14 40	271.2	3.6	7 4 0	+ 0.1	17.4
4 1 20	-111.5	-16.0	5 16 0	-268.1	+ 4.4	7 5 20	+ 13.6	+17.4
4 2 40	123.7	15.6	5 17 20	264.4	5.2	7 6 40	27.0	17.3
4 4 0	135.7	15.2	5 18 40	-260.1	+ 6.0	7 8 0	+ 40.4	+17.2
4 5 20	-147.2	-14.8						

SATELLITE IV.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h.	"	"	d. h.	"	"	d. h.	"	"
0 0	+ 0.0	+34.8	2 0	+332.3	+25.5	4 0	+486.2	+ 2.5
0 3	22.8	34.8	2 3	348.6	24.3	4 3	487.3	+ 0.8
0 6	45.6	34.7	2 6	364.1	23.1	4 6	487.3	- 0.8
0 9	68.3	34.5	2 9	378.9	21.9	4 9	486.3	2.4
0 12	90.9	34.3	2 12	392.9	20.6	4 12	484.2	4.1
0 15	+113.2	+33.9	2 15	+406.0	+19.3	4 15	+480.9	- 5.7
0 18	135.3	33.5	2 18	418.2	17.9	4 18	476.6	7.3
0 21	157.1	33.0	2 21	429.5	16.5	4 21	471.3	8.9
1 0	178.5	32.4	3 0	439.8	15.0	5 0	465.0	10.4
1 3	199.6	31.8	3 3	449.1	13.5	5 3	457.7	12.0
1 6	+220.3	+31.1	3 6	+457.5	+12.0	5 6	+449.3	-13.5
1 9	240.4	30.3	3 9	464.9	10.5	5 9	439.9	15.0
1 12	260.0	29.5	3 12	471.3	8.9	5 12	429.6	16.4
1 15	279.0	28.6	3 15	476.6	7.3	5 15	418.4	17.9
1 18	297.4	27.6	3 18	480.8	5.7	5 18	406.2	19.3
1 21	+315.2	+26.6	3 21	+484.0	+ 4.1	5 21	+393.1	-20.6

JUPITER'S SATELLITES, 1867. 493

COORDINATES IN THE MEAN APPARENT ELLIPSE.

SATELLITE IV.

<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>	<i>t</i>	<i>x'</i>	<i>y'</i>
d. h.			d. h.			d. h.		
6 0	+379.2	-21.9	9 18	-240.1	-30.3	13 12	-457.6	+12.0
6 3	364.4	23.1	9 21	259.7	29.5	13 15	449.3	13.5
6 6	348.8	24.3	10 0	278.7	28.6	13 18	440.0	15.0
6 9	332.5	25.5	10 3	297.2	27.6	13 21	429.7	16.4
6 12	315.4	26.6	10 6	315.0	26.6	14 0	418.5	17.8
6 15	+297.6	-27.6	10 9	-332.1	-25.5	14 3	-406.3	+19.2
6 18	279.2	28.5	10 12	348.4	24.4	14 6	393.2	20.6
6 21	260.2	29.4	10 15	363.9	23.2	14 9	379.3	21.9
7 0	240.6	30.3	10 18	378.7	21.9	14 12	364.6	23.1
7 3	220.5	31.1	10 21	392.7	20.6	14 15	349.1	24.3
7 6	+199.9	-31.8	11 0	-405.8	-19.3	14 18	-332.8	+25.4
7 9	178.8	32.4	11 3	418.0	17.9	14 21	315.7	26.5
7 12	157.4	33.0	11 6	429.3	16.5	15 0	298.0	27.5
7 15	135.6	33.5	11 9	439.6	15.0	15 3	279.6	28.5
7 18	113.5	33.9	11 12	449.0	13.5	15 6	260.5	29.4
7 21	+ 91.2	-34.2	11 15	-457.4	-12.0	15 9	-240.9	+30.3
8 0	68.7	34.5	11 18	464.8	10.5	15 12	220.8	31.1
8 3	46.0	34.7	11 21	471.2	8.9	15 15	200.2	31.8
8 6	23.2	34.8	12 0	476.5	7.3	15 18	179.2	32.4
8 9	+ 0.3	34.8	12 3	480.8	5.7	15 21	157.7	33.0
8 12	- 22.5	-34.8	12 6	-484.0	- 4.1	16 0	-135.9	+33.5
8 15	45.3	34.7	12 9	486.2	2.5	16 3	113.8	33.9
8 18	68.0	34.5	12 12	487.3	- 0.8	16 6	91.5	34.2
8 21	90.5	34.2	12 15	487.3	+ 0.8	16 9	69.0	34.5
9 0	112.9	33.9	12 18	486.3	2.4	16 12	46.3	34.7
9 3	-135.0	-33.5	12 21	-484.2	+ 4.0	16 15	- 23.5	+34.8
9 6	156.8	33.0	13 0	480.9	5.7	16 18	- 0.6	34.8
9 9	178.2	32.4	13 3	476.6	7.3	16 21	+ 22.2	34.8
9 12	199.3	31.8	13 6	471.3	8.9	17 0	+ 45.0	+34.7
9 15	-220.0	-31.1	13 9	-465.0	+10.5			

494 SATURN'S RING, &c., 1867.

THE APPARENT ELEMENTS OF SATURN'S RING.

Mean Noon.	<i>a</i> Outer Major Axis.	<i>b</i> Outer Minor Axis.	<i>p</i> Inclination of Northern Semi-minor Axis to Circle of Declination from North to East.	<i>l</i> The Elevation of the Earth above the Plane of the Ring.	<i>l'</i> The Elevation of the Sun above the Plane of the Ring.	<i>u</i> <i>u'</i> Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on	
						Equator.	Ecliptic.
Jan. 0	35.69	4.29	+1° 46.2	+22° 51.8	+21° 40.4	283° 54.1	240° 48.3
20	36.66	4.38	1 59.3	23 20.6	21 51.1	285 38.1	242 23.3
Feb. 9	37.79	4.50	2 7.8	23 20.6	22 1.3	286 45.2	243 37.6
March 1	39.18	4.65	2 11.2	23 21.9	22 11.2	287 12.6	244 7.0
21	40.43	4.80	2 9.9	23 15.0	22 21.0	286 56.6	243 51.0
April 10	41.44	4.94	2 2.2	23 1.1	22 30.8	286 1.3	242 53.8
30	42.02	5.04	1 51.5	22 42.5	22 40.3	284 38.0	241 32.6
May 20	42.06	5.08	1 39.6	22 22.5	22 49.7	283 3.7	239 58.4
June 9	41.55	5.04	1 28.7	22 5.2	22 58.9	281 37.5	238 32.2
29	40.61	4.94	1 20.9	21 54.7	23 7.9	280 36.0	237 30.7
July 19	39.40	4.80	1 17.6	21 53.5	23 16.7	280 9.8	237 4.7
Aug. 8	38.10	4.64	1 19.4	22 2.3	23 25.4	280 23.6	237 18.6
28	36.87	4.48	1 26.2	22 20.2	23 33.9	281 16.9	238 11.9
Sept. 17	35.82	4.33	1 37.5	22 45.2	23 42.3	282 45.3	239 40.4
Oct. 7	35.02	4.20	1 52.4	23 14.4	23 50.4	284 42.5	241 37.6
27	34.66	4.11	2 9.9	23 45.1	23 58.4	287 0.8	243 56.0
Nov. 16	34.30	4.02	2 29.6	24 14.4	24 6.3	289 31.4	246 26.6
Dec. 6	34.39	3.97	2 48.0	24 40.2	24 14.0	292 4.7	249 0.0
26	34.86	3.96	3 5.9	25 1.0	24 21.4	294 30.6	251 25.9
31	35.02	3.96	+3 10.0	+25 5.4	+24 23.0	295 4.7	252 0.1

Factor which is to be multiplied by *a* and *b* to obtain the axes of

The inner ellipse of the outer Ring = 0.8801 log. Factor = 9.9445

The outer ellipse of the inner Ring = 0.8599 " = 9.9844

The inner ellipse of the inner Ring = 0.6650 " = 9.8228

The inner ellipse of Bond's dusky Ring = 0.5486 " = 9.7392

NOTE. — The sign of *l* indicates whether the visible surface of the Ring is northern or southern.

THE APPARENT DISCS OF VENUS AND MARS.

The Versed Sines of their Illuminated Portions, divided by their Apparent Diameters.

1867.	Venus.	Mars.	1867.	Venus.	Mars.
January 15	0.257	0.998	July 15	0.942	0.937
February 15	0.472	0.952	August 15	0.962	0.956
March 15	0.606	0.913	September 15	0.999	0.972
April 15	0.720	0.899	October 15	0.997	0.965
May 15	0.809	0.904	November 15	0.976	0.994
June 15	0.886	0.919	December 15	0.942	0.999

WASHINGTON' MEAN TIME.

PLANETARY CONSTELLATIONS.

July	d	h	m		d	h	m	
	5	4	46	♂ ♀ ♂ + 1 48	Sept. 30	19	1	♂ ♀ ♀ - 2 57
	5	15	4	♂ ♀ greatest elong. E. 26 11	Oct. 5	20	22	♂ ♀ ☉
	7	0	9	♂ ♀ ☉		6	16	56
	10	12	26	♂ ♀ ☉ ♀ - 2 15		8	22	49
	14	21	58	♂ ♀ in Aphelion.		10	21	14
	18	18	36	♂ ♀ stationary.		12	8	37
	19	2	-	♂ ♀ stationary		18	17	34
	19	17	20	♂ ♀ ☉ ♀ - 2 3		18	17	52
	20	8	3	♂ ♀ ☉ ♀ - 0 22		19	5	36
	21	4	44	♂ ♀ in ☉		23	21	9
	22	5	23	♂ ♀ stationary.		25	9	47
	22	15	46	♂ ♀ ☉ ♀ + 1 2		27	10	32
	28	16	50	♂ ♀ ☉ ♀ + 5 0		28	5	30
	29	10	20	♂ ♀ ☉ ♀ + 4 33		28	9	14
	30	18	38	♂ ♀ ☉ ♀ - 2 11		28	16	7
Aug.	2	11	57	♂ ♀ ☉ Inf.		31	6	33
	2	18	56	♂ ♀ ☉ ♂ - 0 21	Nov. 5	7	23	♂ ♀ ☉ ♀ - 2 35
	4	7	52	♂ ♀ greatest Hel. Lat. S.		6	20	18
	6	19	24	♂ ♀ ☉ ♀ - 2 39		8	17	7
	9	19	6	♂ ♀ ☉ ♀ - 4 37		9	18	9
	10	5	19	♂ ♀ ☉		11	1	17
	12	3	16	♂ ♀ stationary.		14	6	37
	15	17	59	♂ ♀ ☉ ♀ - 2 20		14	23	45
	18	20	42	♂ ♀ ☉ ♀ + 1 6		15	8	35
	20	14	4	♂ ♀ greatest elong. W. 18 27		15	11	2
	23	7	45	♂ ♀ in ☉		18	18	36
	23	12	52	♂ ♀ in Perihelion.		19	6	58
	25	3	51	♂ ♀ ☉ ♀ + 5 1		21	1	11
	25	14	17	♂ ♀ ☉		21	7	59
	27	17	25	♂ ♀ ☉ ♀ + 3 16		22	18	58
	27	21	37	♂ ♀ in Perihelion.		23	20	50
	28	8	25	♂ ♀ ☉ ♀ + 2 53		24	18	1
	28	-	-	♂ ♀ ☉ Eclipsed, invis. at Wash.		24	22	55
	31	11	37	♂ ♀ ☉ ♂ - 2 22		26	7	2
Sept.	3	5	49	♂ ♀ ☉ ♀ - 2 49		26	21	15
	7	5	23	♂ ♀ greatest Hel. Lat. N.	Dec. 2	19	46	♂ ♀ ☉ ♀ - 2 0
	10	3	48	♂ ♀ ☉ ♀ + 0 22		4	4	39
	11	18	45	♂ ♀ ☉ ♀ - 2 42		6	2	8
	13	-	-	♂ ♀ eclipsed, vis. at Wash.		9	1	0
	14	16	37	♂ ♀ ☉ Sup.		11	19	29
	14	16	40	♂ ♀ greatest Hel. Lat. N.		12	7	30
	15	1	51	♂ ♀ ☉ ♀ + 1 3		13	20	25
	21	11	57	♂ ♀ ☉ ♀ + 4 59		21	13	31
	22	19	27	♂ ♀ ☉ enters ♄, autumn begins.		22	11	16
	24	23	10	♂ ♀ ☉		23	16	35
	27	7	20	♂ ♀ ☉ ♀ - 0 34		25	10	59
	27	13	38	♂ ♀ in ☉		27	11	41
	28	0	10	♂ ♀ ☉ ♀ - 2 30		27	16	14
	29	8	2	♂ ♀ ☉ ♂ - 4 7		30	10	44
	30	16	58	♂ ♀ in ☉				

POSITIONS OF THE PRINCIPAL OBSERVATORIES.

(North Latitudes and West Longitudes are considered as positive.)

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
Åbo,	+60° 26' 56.8	— 6 ^h 37 ^m 20.0	260° 40' 0.6	337° 42' 48.6
Albany,	+42 39 50.0	— 0 13 12.6	356 41 51.0	73 44 39.0
Altona,	+53 32 45.3	— 5 47 57.4	273 0 39.8	350 3 27.8
Ann Arbor,	+42 16 48.0	+ 0 26 41.0	6 40 15.0	83 43 3.0
Athens,	+37 58 20.0	— 6 43 6.4	259 13 24.2	336 16 12.2
Berlin,	+52 30 16.7	— 6 1 46.1	269 33 28.1	346 36 16.1
Bilk,	+51 12 25.0	— 5 35 16.1	276 10 58.1	353 13 46.1
Bonn,	+50 43 45.0	— 5 36 35.7	275 51 5.1	352 53 53.1
Breslau,	+51 6 56.0	— 6 16 21.2	265 54 42.0	342 57 30.0
Brussels,	+50 51 10.7	— 5 25 38.8	278 35 18.0	355 38 6.0
Cambridge (Eng.),	+52 12 51.8	— 5 8 34.7	282 51 18.9	359 54 6.9
Cambridge (Mass.),	+42 22 48.6	— 0 23 41.5	354 4 36.9	71 7 24.9
Cape of Good Hope,	—33 56 3.0	— 6 22 7.2	264 28 12.3	341 31 0.3
Christiania,	+59 54 43.7	— 5 51 6.0	272 13 30.6	349 16 18.6
Cincinnati,	+39 5 54.0	+ 0 29 46.9	7 26 42.8	84 29 30.8
Copenhagen,	+55 40 53.0	— 5 58 30.5	270 22 22.5	347 25 10.5
Cracow,	+50 3 50.0	— 6 28 2.4	262 59 23.4	340 2 11.4
Dorpat,	+58 22 47.1	— 6 55 5.8	256 13 33.6	333 16 21.6
Dublin,	+53 23 13.0	— 4 42 49.2	289 17 42.0	6 20 30.0
Durham,	+54 46 6.4	— 5 1 53.2	284 31 42.0	1 34 30.0
Edinburgh,	+55 57 23.2	— 4 55 28.2	286 7 57.0	3 10 45.0
Florence,	+43 46 40.8	— 5 53 12.9	271 41 47.1	348 44 35.1
Geneva,	+46 11 58.8	— 5 32 48.9	276 47 46.8	353 50 34.8
Georgetown,	+38 54 26.1	+ 0 0 6.2	0 1 33.0	77 4 21.0
Göttingen,	+51 31 47.9	— 5 47 57.3	273 0 40.5	350 3 28.5
Gotha,	+50 56 5.2	— 5 51 6.9	272 13 17.1	349 16 5.1
Greenwich,	+51 28 38.2	— 5 8 11.2	282 57 12.0	0 0 0.0
Hamburg,	+53 33 7.0	— 5 48 4.8	272 58 48.6	350 1 36.6
Hudson,	+41 14 42.6	+ 0 17 32.1	4 23 0.9	81 25 48.9
Kasan,	+55 47 23.1	— 8 24 43.1	233 49 13.1	310 52 1.1
Königsberg,	+54 42 50.4	— 6 30 11.6	262 27 6.6	339 29 54.6
Kremsmünster,	+48 3 23.8	— 6 4 44.6	268 48 50.7	345 51 38.7
Leipsic,	+51 20 20.7	— 5 57 39.7	270 35 4.5	347 37 52.5
Leyden,	+52 9 28.2	— 5 26 8.6	278 27 50.6	355 30 38.6
Liverpool,	+53 24 47.4	— 4 56 11.1	285 57 13.7	3 0 1.7
London,	+51 31 29.8	— 5 7 34.1	283 6 28.5	0 9 16.5
Madras,	+13 4 9.2	—10 29 8.2	202 42 57.0	279 45 45.0
Mannheim,	+49 29 12.9	— 5 42 2.7	274 29 19.5	351 32 7.5
Markree,	+54 10 31.7	— 4 34 22.8	291 24 18.0	8 27 6.0
Marseilles,	+43 17 49.0	— 5 29 40.2	277 34 57.2	354 37 45.2
Milan,	+45 28 0.7	— 5 44 57.8	273 45 32.4	350 48 20.4
Modena,	+44 38 52.8	— 5 51 55.2	272 1 12.5	349 4 0.5
Moscow,	+55 45 19.8	— 7 38 28.1	245 22 58.5	322 25 46.5
Munich,	+48 8 45.0	— 5 54 37.6	271 20 35.4	348 23 23.4
Naples,	+40 51 46.6	— 6 5 12.1	268 41 58.1	345 44 46.1
Olmütz,	+49 35 40.0	— 6 17 11.3	265 42 10.5	342 44 58.5
Oxford,	+51 45 36.0	— 5 3 8.6	284 12 51.0	1 15 39.0
Padua,	+45 24 2.5	— 5 55 40.2	271 4 56.6	348 7 44.6
Palermo,	+38 6 44.0	— 6 1 36.7	269 35 50.1	346 38 38.1
Paramatta,	—33 48 49.8	+ 8 47 42.6	131 55 38.3	208 58 26.3
Paris,	+48 50 13.2	— 5 17 32.7	280 36 50.1	357 39 38.1

Place.	Latitude.	Longitude from Washington in Time.	Longitude from Washington in Arc.	Longitude from Greenwich in Arc.
St. Petersburg, . . .	+59° 56' 29.7"	—7 ^h 9 ^m 24.7 ^s	252° 38' 49.8"	329° 41' 37.8"
Philadelphia, . . .	+39 57 7.5	—0 7 33.6	358 6 35.4	75 9 23.4
Prague,	+50 5 18.5	—6 5 53.2	268 31 42.6	345 34 30.6
Pulkowa,	+59 46 18.7	—7 9 29.9	252 37 31.9	329 40 19.9
Rome,	+41 53 54.0	—5 58 5.9	270 28 31.5	347 31 19.5
San Fernando, . . .	+36 27 45.0	—4 43 22.1	289 9 29.1	6 12 17.1
Santiago,	—33 26 24.8	—0 25 52.3	353 31 55.5	70 34 43.5
Senftenberg, . . .	+50 5 10.1	—6 14 1.1	266 29 43.1	343 32 31.1
Upsala,	+59 51 31.5	—6 18 42.4	265 19 24.0	342 22 12.0
Vienna,	+48 12 35.5	—6 13 43.7	266 34 4.1	343 36 52.1
Washington,	+38 53 39.3	0 0 0.0	0 0 0.0	77 2 48.0
Wilna,	+54 40 59.1	—6 49 23.0	257 39 15.5	334 42 3.5

ON THE ARRANGEMENT AND USE OF THE TABLES IN THIS EPHEMERIS.

THIS Ephemeris is divided into two distinct parts. One part is designed for the special use of NAVIGATORS, and is adapted to the Meridian of Greenwich.

The other part is suited to the convenience of ASTRONOMERS, on this continent particularly, and is adapted to the Meridian of Washington.

THE NAUTICAL PART.

This part contains the Ephemeris of the Sun and Moon; the Distances of the Moon from the centres of the Sun and the four most conspicuous Planets, and from certain Fixed Stars; the Ephemeris of the Planets Venus, Mars, Jupiter, and Saturn; the Mean Places of 100 principal Fixed Stars, for January 1, 1867.

Time. — Astronomers make use of several different kinds of time; an explanation of the nature of which, and of the method of passing from one to another, properly precedes an explanation of the uses of the Ephemeris.

Sidereal Time. — Sidereal Time is measured by the daily motion of the stars, or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over any meridian, and its next succeeding return to the same meridian. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian.

Solar Time. — Solar Time is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour angle of the sun is called *Solar Time*. This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the meridian are not exactly equal, but depend upon the variable motion of the sun in right ascension.

The want of uniformity in the sun's motion in right ascension arises from two different causes; one, that the sun does not move in the equator, but in the ecliptic; the other, that the sun's motion in the ecliptic is not uniform.

To avoid the irregularity in time caused by the want of uniformity in the sun's motion, a fictitious sun, called a *Mean Sun*, is supposed to move in the equator with a uniform velocity.

Mean Time, which is perfectly equable in its increase, is measured by the motion of this *Mean Sun*; the latter at certain periods agrees with the real sun, then again is in advance of it, and at other times is behind it.

True or Apparent Time is measured by the motion of the real sun.

The difference between the *true* and *mean* time is called the *Equation of Time*. By means of it we pass from *true* to *mean* time, or the reverse. Thus, if the *true* time be given, the *mean* time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I. of the Calendar. If the *mean* time be given, the *true* time is obtained by applying the equation of time as directed by the precept on page II. of the Calendar.

The vernal equinox, by the motion of which Sidereal Time is measured, is not a fixed, but a movable, point on the equator. Its motion is composed of two parts: precession, which is proportional to the time, and is combined with the daily motion of the heavens; and nutation, which is periodical. In consequence of the latter, the daily motion of the equinox is not strictly a uniform measure of time, and the Sidereal Time in common use might therefore be called *Apparent Sidereal Time*, and *Mean Sidereal Time* would be that reckoned from the transit of the mean equinox; but the irregularity referred to cannot exceed $2''.3$ in a period of nineteen years, and is, therefore, of no practical importance.

Day.—According to the customs of society, the hours are counted from 0 to 12 from noon to midnight, after which they are again reckoned from 0 to 12 from midnight to noon. The *civil day* consists of twenty-four hours, but is divided in this manner into two periods, commencing at midnight. In this respect it differs from the *astronomical day*, which commences at noon. The *civil day* comprises twenty-four hours, from one midnight to the next following. The first period of twelve hours is marked A. M., the last period of twelve hours is marked P. M. The *astronomical day* also comprises twenty-four hours, but they are counted from 0 to 24, and from the noon of one day to that of the next following.

The civil day begins twelve hours before the astronomical day; therefore the first part of the *civil day* answers to the last part of the preceding *astronomical day*, and the last part of the *civil day* to the first part of the same *astronomical day*. Thus, January 10th, 2^h A. M., *civil day*, is January 9th, 14^h, *astronomical day*; and January 9th, 2^h P. M., *civil day*, is also January 9th, 2^h, *astronomical day*. The rule, then, for the transformation of the civil time into astronomical time is this: If the civil time is marked A. M., take one from the date, and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, of which the contents are as follows:—

Pages I., II., III. are devoted to the Ephemeris of the Sun. Page I. contains, first, the *Apparent Right Ascension and Declination* of the sun at Greenwich apparent noon.

The former of these quantities is used for finding the error of a clock regulated to sidereal time. The difference between the time by the clock of the meridian passage of the sun, and the sun's right ascension reduced to apparent noon, is the error of the clock from sidereal time. It is also employed in determining the time by the transit of a fixed star over the meridian, as is explained in page 223 of BOWDITCH'S *American Practical Navigator*. The use of the sun's declination in finding the true amplitude and azimuth, the latitude by altitudes of the sun in and out of the meridian, the time, &c., is also so clearly defined in this standard work, which is in the hands of all American seamen, that any further explanation in this place is unnecessary. Adjoining the columns of *Right Ascension* and *Declination* are the differences of these quantities for one hour (at noon), by means of which they may be calculated for any time out of the meridian, by multiplying this difference by the hours and parts of hours from noon, and adding the amount to, or subtracting it from, the quantity at noon, according as it is increasing or decreasing. If, for example, the declination of the sun were required at 3^h 40^m P. M. of Saturday, January 19th, 1867, the declination of the sun would be taken out first for

January 19th, at noon.

From which subtract the diff. for 1 hour, $31''.42$, multiplied by 3,

And the proportional part for 40 minutes,

The result is the sun's declination on the 19th, at 3^h 40^m P. M.,

20	22	7.7	S.
		1	34.3
20	20	33.4	
		20.9	
20	20	12.5	

The difference for one hour is not the same for every hour in the twenty-four; but being given in the pages of this Ephemeris for the first hour of the day, it is sufficiently accurate for the purposes of the navigator.

The column of the *Sun's Semidiameter* requires no explanation.

The column headed *Sidereal Time of the Semidiameter passing the Meridian*, is employed in obtaining the passage of the sun's centre over the wires of a transit-instrument, when the passage of one limb only has been observed. If the western limb has been observed, the quantity found in this column is to be added to the time of transit over the middle wire, or the mean of the times of transit over all the wires; but if the eastern limb has been observed, the quantities in this column are to be subtracted.

The next column contains the *Equation of Time*, which, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the *apparent time*, or the time given by an observation of the sun, to obtain the *mean time*, or the time shown by a clock. The heading of the column directs the manner in which the equation is to be applied, and where there is a change in the course of the month from addition to subtraction, or the reverse, as in the months of April and June, the two different directions are separated by a line, while a corresponding line below points out the date at which the change takes place. The difference for one hour is given in an adjoining column, by means of which the equation for any time from noon is easily obtained. If, for example, the equation of time for January 24th, at 8^h 20^m P. M., were required, we should have

Equation for January 24, at noon,	12 ^m 19 ^s .87
Correction for 3 ^h 20 ^m (additive),	2.01
Equation, January 24, at 3 ^h 20 ^m P. M.,	12 21.88

Which, according to the rule at the head of the column, is to be added to *apparent time* to obtain *mean time*.

Page II. contains the Apparent Right Ascension and Declination of the Sun, and the Equation of Time for Greenwich Mean Noon; to these is added a column containing the Sidereal Time of Mean Noon.

Page III. contains the Longitude and Latitude of the Sun, and the Logarithm of the Distance of the Earth, at Greenwich Mean Noon of each day. The Longitude is given in two columns, headed λ and λ' ; and one, λ , is the Sun's longitude counted from the true equinox of the date; the other, λ' , is the same coördinate counted from the mean equinox of the beginning of the year. A column of hourly differences enables the computer to obtain the Sun's longitude for any hour from noon. The hourly differences of the logarithm of the Radius Vector are likewise given. The longitudes of the Sun are the true longitudes, not affected by aberration. The last column on this page contains the Mean Time of Sidereal Noon.

Page IV. contains the Moon's *Semidiameter* and *Horizontal Parallax* for every noon and midnight. The former may be corrected for any time between the dates for which it is given in the Ephemeris, by means of Table XL of BOWDITCH'S *Navigator*, or simply by computing the proportional part.

This is readily done by considering that the semidiameter is given for every twelve hours, that the difference, therefore, between any two successive semidiameters corresponds to twelve hours, and that the difference required (or correction) is that difference which corresponds to a time less than twelve hours. If, for example, the semidiameter of the moon is to be taken out for 9 o'clock, P. M., of the 12th of Jan., then we say, that as twelve hours is to 5".5, the whole difference between the semidiameters at noon and midnight of the 12th, so is nine hours to 4".1, the correction to be added to the semidiameter at noon, because it is increasing; the moon's semidiameter, then, for Jan. 12^d 9^a is 15' 47".6. Adjoining the columns containing the Moon's

Horizontal Parallax for noon and midnight, are columns giving the change which these quantities undergo in one hour. The sign plus or minus (+ or —) is prefixed to these differences, showing whether they are additive or subtractive, or, in other words, whether the horizontal parallax is increasing or decreasing. In order to reduce the parallax to any time intermediate between those dates for which it is given in the Ephemeris, the mode of proceeding is that which has been already explained in the case of the equation of time. The Moon's *Meridian Passage*, which is given on this page to minutes and tenths of minutes, is also accompanied with a column of differences for one hour, by means of which, having the longitude turned into time, the time of the moon's meridian passage at any other place may be computed. Or it may be more quickly derived from BOWDITCH'S Table XVIII., by simple inspection. The last column of this page contains the *Age* of the Moon, to tenths of days, or the time elapsed since the preceding new moon. It requires no explanation.

The pages from V. to XII. inclusive are taken up with the Moon's *Right Ascension and Declination*, which are given for every hour of every day in the month, and are accompanied with columns of differences for every minute of each hour. The right ascension and declination of the moon change so rapidly, that, if they were not given at frequent intervals, the moon would cease to be useful to the practical navigator as a means of determining the latitude and time. These quantities are wanted for Greenwich mean time, which is either taken directly from the face of a well-regulated chronometer, or is obtained by applying the longitude, turned into time, to the local time of the computer. They have only to be corrected for the minutes and seconds of the time at Greenwich. Thus, if the right ascension and declination of the moon were required for Monday, January 21^d 8^h 10^m, we have only to add to the right ascension at 8^h as given in the Ephemeris, viz. to 9^h 33^m 22^s.11, the product of the difference for one minute in the adjoining column multiplied by 10, the product, that is, of 2^s.3531 by 10, or 23^s.53; the result is the moon's right ascension at the required time, equal to 9^h 33^m 45^s.64. If we were to take out the declination for the same date, the correction for the ten minutes above the hour would be subtractive, because the declination, unlike the right ascension, is decreasing; thus,

Moon's declination for January 21 ^d 8 ^h	11° 35' 58.2" N.
Correction for 10 ^m is 88".5	1 28.5
Moon's declination for January 21 ^d 8 ^h 10 ^m	11 34 29.7

The last page of the right ascensions and declinations contains the *Phases* of the Moon, and the dates of the Moon's *Perigee* and *Apogee*, or least and greatest distances from the earth.

The remaining six pages of the month are occupied by the *Lunar Distances*. They are given in the same manner as in the British *Nautical Almanac*, in order to conform to the rules of BOWDITCH'S *Navigator*. These tables contain the geocentric distances of the centre of the moon from the sun, the larger planets, and certain fixed stars, at intervals of three hours, beginning with the noon of each day. All the distances that can be observed on the same day are grouped together under that date, and the letter E. or W. is affixed to the name of the star or planet, to indicate whether it is on the east or west side of the moon. The columns are read from the left to the right, across both pages of the same opening. The principle of determining the longitude by means of lunar distances consists in this: that they furnish the navigator with the means of comparing his own time, on board ship, with the time at the Greenwich Observatory. At the moment of observing a distance he notes the time by his own watch or chronometer, and by looking into the Ephemeris he discovers what o'clock it is at Greenwich when the moon and star are in the relative position with regard to each other which he has measured with his sextant. But it will very rarely occur that the navigator's *true distance*, that is, his observed distance cleared from the effects of refraction and

lunar parallax, will be found in the Ephemeris. It will prove in most cases to be a quantity lying between two given distances. He is obliged, therefore, to take the difference between his own true distance and the one nearest to it in the pages of the Ephemeris, and to apply to the time standing over the latter a correction proportioned to this difference. This is a case of the simple rule of three. Owing, however, to the various denominations of space and time that enter into the question, it has been found convenient to lessen the labor of the operation by putting between every two successive distances given in the Ephemeris the proportional logarithm of their difference. This proportional logarithm is obtained by subtracting the logarithm of the difference of the two distances from the logarithm of three hours (both quantities being reduced to seconds), because three hours is the interval of time between two successive distances.

On the 22d of May, at midnight, of Greenwich meantime, the distance of the moon's centre from the planet Saturn, west of her, is $59^{\circ} 45' 17''$, and at 15 hours of the same date it is $61^{\circ} 14' 41''$; the difference between the two distances is $1^{\circ} 29' 24''$, or, reduced to seconds, is 5364'', the logarithm of which, subtracted from the logarithm of three hours, or 10800'', gives for the proportional logarithm of the difference between the two distances 3039, as it is in the column headed *P. L. of diff.* If the calculated *true distance* of the navigator lie between the two given distances above mentioned, as, for instance, if it should be $60^{\circ} 20' 3''$, the corresponding correction of the time would be found as follows:—

Distance in the Ephemeris at Midnight,	59 45 17
Calculated <i>True Distance</i> ,	60 20 3
Difference,	0 34 46
Prop. log. in Ephemeris,	3039
Prop. log. of Difference, $0^{\circ} 34' 46''$,	7141
Prop. log. of $1^h 10^m 0^s$,	4102

And this time is to be added to the time at the head of the column from which the distance of the Ephemeris was taken, which would make the time at Greenwich corresponding to the Navigator's True Distance $1^h 10^m 0^s$ on the morning of the 23d of May.

This method of getting the Greenwich time between two given times in the Ephemeris rests upon the supposition, that the variation between one distance and the next following is uniform and regular. But owing to the inequalities in the moon's motion, this is not the case; and it is, in consequence of this, necessary to apply to the Greenwich time obtained by the preceding method a small correction.

This correction, due to the second differences in the moon's motion, is given in the Table on page 7 of the Appendix, and is taken out and applied as follows.

The top of the Table is entered with the difference between that proportional logarithm of the Ephemeris which has already been used and the one next following, and the side of the Table is entered with the time which has been added to that at the head of the column of the Ephemeris, that is, the time given by the difference of the proportional logarithms at the close of the preceding paragraph; under the former, and opposite the latter, will be found the correction, in seconds of time, to be added to the time at Greenwich if the proportional logarithms are decreasing, but subtracted if they are increasing.

The Ephemeris of the Planets, from page 218 to page 241, consists of the apparent right ascension at Greenwich mean noon and its variation for one hour, the apparent declination at the same date and its variation for one hour, and the mean time of their meridian passage; and at the bottom of the page will be found the semidiameter and horizontal parallax. The hourly variations belong to noon of the day on which they are given. The mode of correcting by means of the hourly variation for any time from noon has already been explained.

The Solar rectangular Equatorial Coördinates, referred to the true equinox and equator of date, for Greenwich mean noon, on pages 242 – 244, are added, and the Moon's Longitude and Latitude on pages 245 – 248.

Finally, the Mean Places, with their annual variations, of one hundred and ninety-eight Fixed Stars for the beginning of the year 1867 are given on pages 262 – 265.

When the latitude is to be deduced from the meridian altitude of one of these stars, its time of passing the meridian can be ascertained by taking the sum of the right ascension of the star, and the mean time of sidereal noon contained in the last column of page III. of each month. The right ascension of the star is, in fact, its hour angle, or difference in time, from the sidereal noon, or 0^h. If, then, a vessel in longitude 45° West should wish to obtain the latitude by a meridian observation of a star, as, for example, α TAURI (*Aldebaran*), on the evening of January 1, 1867, the process for obtaining the time of meridian passage would be as follows: —

Mean Time of sidereal 0 ^h January 1, 1867,	^h ^m ^s 5 16 27
Correction for Longitude omitted.	
Right Ascension of α TAURI (<i>Aldebaran</i>),	<u>4 28 17</u>
Time of star's meridian passage,	9 44 44

The instant of passage might be more accurately determined by making an allowance for the difference between mean solar and sidereal time, and by applying the correction for longitude; but the above is sufficiently near for the purpose for which it is wanted, which is, to know the period of meridian passage approximately, in order to identify the star if necessary, and to be in time with the observation. The navigator will perceive that the dates in this column of page III. are astronomical, and will observe the distinctions of time explained in the first part of this article; he will also remember that when the sum exceeds 24 hours, 24 hours are to be subtracted, and a unit is to be added to the day of the month.

The Sun's Right Ascension may also be used for finding the time of meridian passage of a star, as shown in BOWDITCH'S *Navigator*, page 223.

THE ASTRONOMICAL PART.

THIS part is adapted to the meridian of Washington.

Obliquity of the Ecliptic, &c., p. 250.—On this page are given the apparent obliquity, the equation of equinoxes in longitude and right ascension, the precession of equinoxes in longitude, and the sun's aberration and horizontal parallax, for every ten days of the year; at the bottom of the page will be found the mean obliquity for the beginning of the year, the precession for the middle of the year, the logarithm of the precession in a sidereal day, and the logarithm of the precession in a solar day. On the same page, the mean longitude of the moon's ascending node is also given for every ten days, and at the bottom of the page its daily motion.

Fixed Stars.—The Logarithms of BESSEL'S A, B, C, D, for correcting the places of the Fixed Stars, are given for the mean midnight of every day of the year, and the constants of reduction for every midnight. To these tables are added BESSEL'S formulas of reduction, by which the tabular quantities were computed, with PETERS'S coefficients, and BESSEL'S notation. (Pages 251–261.)

The mean places of 198 Fixed Stars are given for the instant when the sun's mean longitude was 280° (1867, Jan. $0^d + .109$). Those of 52 *circumpolar* stars (stars within 25° of either pole) are given on page 262, and those of 146 *time* stars (stars within 65° of the equator) on pages 263–265. The *apparent* places of α , ϵ , δ , and λ , Ursæ Minoris, are given for every upper transit at Washington, pages 266–277; and the *apparent* places of the remaining 48 *circumpolar* stars on pages 278–290, and of the 146 *time* stars on pages 291–327, for every tenth transit, together with *ten times* their *daily* motion at transit. The approximate time of each transit is given in mean solar days and tenths of a day.

In the Appendix will be found Tables III., IV., and V., which give corrections of the apparent places of several circumpolar stars, and of the constants A and B, for small terms of nutation.

Solar Ephemeris.—In the Solar Ephemeris, given for Washington mean and apparent noon, the hourly motions in right ascension and declination are the motions at the instant of noon. Only the seconds of right ascension and declination are given for apparent noon, the degrees and minutes being usually the same as for mean noon.

In the pages (334–336) of *Moon Culminations* are given the mean solar time of the upper transit of the moon's centre at Washington, expressed to hundredths of a minute, for convenience of taking out the moon's right ascension at this time from the Lunar Ephemeris. By means of the hourly difference given for the instant of Washington transit, the time of transit at any place within six hours of Washington in longitude may be found with sufficient accuracy by using the hourly difference interpolated for a longitude half that of the given place. The sidereal time of semidiameter passing the meridian at Washington is given in the next column. By the numbers in the fifth column are indicated the four moon-culminating stars, the two next preceding and two next following the moon, proper to be observed with the moon at each transit; the numbers are those of the stars in the list of *moon-culminating stars*. The bright limb of the moon is indicated by a Roman numeral in the last column. The right ascension of the bright limb at its transit over any meridian may be found as follows: Suppose it were required for the transit of August 8, at Upper Astoria, Oregon, in longitude,

$$W. \text{ from Washington } 8^h 6^m.966 = 3^h.116 = 0^d.130.$$

$$W. \text{ from Greenwich } 8^h 15^m.15.$$

The transit of the moon's *centre* at Upper Astoria occurs at

$$7^h 8^m.20 + 3.116 (1^m.942) = 7^h 14^m.25 \text{ Upper Astoria time,} \\ = 15^h 29^m.40 \text{ Greenwich time,}$$

at which time we find, on page 133,

$$\text{Moon's R. A.} = 16^h 21^m 53^s.91 + 29.40 (2^s.0465) = 16^h 22^m 54^s.08, \\ \text{Approximate Dec.} = -16^\circ 20'.$$

The above hourly motion ($1^m.942$) is found by interpolating to $0^d.065$ in advance of that given on page 335. Since the bright limb is I., the *preceding* one, the correction for time of semidiameter passing the meridian, taken from the fourth column on page 335, and interpolated to $0^d.130$ in advance, is to be *subtracted* from the right ascension of centre. This gives for the right ascension of the bright limb, at its transit at Upper Astoria,

$$16^h 22^m 54^s.08 - 64^s.09 = 16^h 21^m 49^s.99.$$

Moon-Culminating Stars, pp. 337–340. — The *mean* places, with their annual variations of 174 stars near the moon's path are given for the beginning of the fictitious year (Jan. $0^d + .109$). The names of 35 of them, whose *apparent* places are given in the Ephemeris of the *Fixed Stars* are printed in SMALL CAPITALS.

The *apparent* places of the others may be obtained by the quantities and formulas on pages 254–261. Thus, the approximate right ascension and declination of ν^2 Scorpii (one of the four stars corresponding to the transit of the last example), from page 339, being

$$\alpha = 16^h 4^m 16^s = 241^\circ 4', \quad \delta = -19^\circ 7',$$

the computation of its *apparent* right ascension proceeds as follows for transit at Upper Astoria at Aug. $8^d.43$ Washington mean time. The quantities from page 258 being taken for a date $0^d.07$ previous to the midnight of August 8th, for which they are given there,

$G = 39^\circ 42'$	$\log g = 1.1487$	$\log h = 1.2920$	$E = -0.01$
$G + \alpha = 280^\circ 46'$	$\log \sin (G + \alpha) = 9.9923n$	$\log \sin (H + \alpha) = 9.4781$	$f = +24.90$
$H = 136^\circ 26'$	$\log \tan \delta = 9.5399n$	$\log \sec \delta = 0.0247$	$+ 4.80$
$H + \alpha = 17^\circ 30'$	$\frac{0.6809}{4.80}$	$\frac{0.7948}{6.23}$	$+ 6.23$
		$a' - \alpha = +35.92$	

whence

$$\alpha' = 16^h 4^m 16^s.18 + (35^s.92 = 2^s.39) = 16^h 4^m 18^s.57.$$

The *Ephemeris of the Moon*, which follows, and the *Moon's Phases*, require no special observation. In the moon's ephemeris, as in that of the sun, the hourly motions belong to the instant for which they are given.

The ephemerides of the two interior planets are given for mean noon and the time of transit, and those of the exterior planets for sidereal noon and the time of transit. The column "day of the month" for the exterior planets contains the mean time of sidereal noon expressed in days and tenths of a day.

The place of a planet for any number of minutes, t , from the nearest noon for which it is given, t being negative when the time precedes the noon, may be computed by the formulas

$$\alpha = \alpha_0 + \alpha t + b t^2, \\ \delta = \delta_0 + \alpha t + b t^2,$$

α and δ denoting the right ascension and declination required, and α_0, δ_0 , the right ascension and declination for the nearest noon; the logarithms of the coefficients a and b are given with the ephemeris. For an interior planet, t must be expressed in minutes of mean time; for an exterior planet, in minutes of sidereal time.

The *Solar Coördinates* are given for each mean noon and midnight, referred to the apparent equinox and equator, and also to the mean equinox and equator, at the beginning of the year. In the case of the rectangular coördinates, only the last four decimals are given for the mean equinox and equator, and the first three places are to be taken from the apparent equinox and equator. When a change of a unit is to be made in the third place, it is indicated by a corresponding colon (:).

The *Planetary Coördinates* are referred to the mean equinox and ecliptic of the mean noon of the 2400,000th day of the Julian Period, and the dates for which they are given are counted from this epoch in mean solar days. They may be converted into days of the Julian Period by adding 2400,000. The columns $-\frac{k^2}{r^3} x$, &c. contain the quantities $-1600 m \frac{k^2}{r^3} x$, $-1600 m \frac{k^2}{r^3} y$, $-1600 m \frac{k^2}{r^3} z$, in units of the 7th decimal place, in which m denotes the mass of the planet, and k^2 the unit of attractive force in the solar system, or $\log k = 8.2355814$.

Eclipses.—The *Tables of Data of the Solar Eclipses* are adapted to very accurate computation by the following formulas.

$$\begin{aligned} \text{Let } \phi &= \text{the latitude of the place,} \\ \lambda &= \text{its western longitude from Washington,} \\ \log e &= 8.9110835, \\ \log (1 - e^2) &= 9.9971066, \\ \sin \phi' &= e \sin \phi, \\ h &= \sec \phi' \cos \phi, \\ k &= (1 - e^2) \sec \phi' \sin \phi, \\ a &= A - h \sin (\mu - \lambda), \\ b &= B - E k + G h \cos (\mu - \lambda), \\ c &= -C + F k - H h \cos (\mu - \lambda), \\ m &= \sqrt{bc}. \end{aligned}$$

If the instant for computation were correctly chosen at the time of beginning or end of the eclipse, m would be exactly equal to a . If m be not equal to a , the instant for a new computation, which will be an approximation to the actual time of beginning or end, may be found by adding to the preceding time of computation an interval t , which may be obtained in seconds by the formulas,

$$\begin{aligned} \log \mu' &= 1.86167, \\ \tan \frac{1}{2} \psi &= \frac{c}{m} = \frac{m}{b}, \\ a' &= A' - \mu' h \cos (\mu - \lambda), \\ b' &= B' - \mu' G h \sin (\mu - \lambda), \\ t &= \frac{1000000 (m - a)}{a' + b' \cot \psi}; \end{aligned}$$

ψ must be taken of the same sign with a , and is a sufficiently near approximation to the angle of contact from the north towards the east. For the shadow of a total eclipse, ψ must be taken with a sign opposite that of a .

The magnitude of the eclipse is found by taking the difference (with regard to the signs) between the value of ψ at the beginning and its value at the end of the eclipse, and if this difference is denoted by 2θ , the number of digits eclipsed is

$$12 (1 + n) \sin^2 \frac{1}{2} \theta, \quad \text{or, } 12 (1 + n) \cos^2 \frac{1}{2} \theta,$$

according as θ is acute or obtuse; n is the ratio of the semidiameter of the moon to that of the sun.

The value of θ may also be obtained by the formulas

$$\tan \chi = \frac{b'}{a'}, \quad \theta = \psi + \chi$$

(in which χ has the sign of b'); and the expression of t may be changed to

$$t = 1000000 \cdot \frac{m-a}{a'} \cdot \frac{\cos \chi \sin \psi}{\sin \theta}.$$

The following is an example of the computation of the beginning of the Eclipse of March 5, for the Observatory at Pulkowa.

For Pulkowa, $\phi = + 59^\circ 46' 18''.7$	$\lambda = 252^\circ 37' 31''.9$
$\log \sin \phi = 9.9365276$	$\log \cos \phi = 9.7019515$
$\log \sin \phi' = 8.8476111$	$\log \sec \phi' = 0.0010791$
$\log k = 9.9347133$	$\log h = 9.7030306$

A first approximation may be made from the chart, and corrected by a computation like the following. In this way we obtain $15^h 52^m$ Washington mean time as a near approximation to the time of the beginning of the eclipse at Pulkowa. For a nearer approximation, take from the table (p. 413) for $15^h 52^m$

A = - 0.62616	$\log E = 9.997582$
B = + 1.17062	$\log F = 9.997996$
C = + 0.06064	$\log G = 9.022576 n$
A' = + 143.40	$\log H = 8.982098 n$
B' = + 44.06	$\mu = 235^\circ 6' 21''.7$

Hence

$$\mu - \lambda = 842^\circ 28' 49''.8$$

$\log \cos (\mu - \lambda) = 9.979373$ $\log [h \cos (\mu - \lambda)] = 9.682404$ $\log [G h \cos (\mu - \lambda)] = 8.704980 n$ $\log (E k) = 9.932295$ $G h \cos (\mu - \lambda) = -0.05070$ $- E k = -0.85565$ $B = +1.17062$ $b = +0.26427$ $\log b = 9.422048$ $\log c = 9.925317$ $\log m = 9.673682$ $\log \tan \frac{1}{2} \psi = 0.251635$ $\psi = -121^\circ 29'$ $\log [\mu' h \cos (\mu - \lambda)] = 1.54407$ $-\mu' h \cos (\mu - \lambda) = -35.00$ $a' = +108.40$ $a' + b' \cot \psi = +134.67$ $\log [10^6 (m - a)] = 8.3997$ $\log (a' + b' \cot \psi) = 2.1293$ $\log t = 1.2704$	$\log \sin (\mu - \lambda) = 9.478610 n$ $\log [h \sin (\mu - \lambda)] = 9.181641 n$ $\log [H h \cos (\mu - \lambda)] = 8.664502 n$ $\log (F k) = 9.932709$ $- H h \cos (\mu - \lambda) = + 0.04619$ $F k = + 0.85646$ $- C = - 0.06064$ $c = + 0.84201$ $- h \sin (\mu - \lambda) = + 0.15193$ $A = - 0.62616$ $a = - 0.47423$ $m = - 0.47172$ $m - a = + 0.00251$ $\log [G \mu' h \sin (\mu - \lambda)] = 0.06589$ $- G \mu' h \sin (\mu - \lambda) = - 1.16$ $b' = + 42.90$ $\log b' = 1.63246$ $\log \cot \psi = 9.78704$ $b' \cot \psi = + 26.27$ $t = + 18.64$
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Approximate time	15	52	0.00
t, the correction			+18.64
Washington mean time of beginning	15	52	18.64
Pulkowa mean time of beginning	23	1	48.51

Occultations. — The pages 418 to 456, inclusive, are taken up with *Elements for Facilitating the Calculation of Occultations of Planets and Stars by the Moon*. These elements are given for all the stars to the fifth magnitude inclusive contained in the British Association Catalogue, and for some of the sixth magnitude, which can be occulted by the moon during the year 1867.

The several columns of these pages contain, — 1. the date; 2. the star's name; 3. the star's magnitude; 4. the limiting parallels of visibility; 5. Washington mean time of the moon's true conjunction with the star in right ascension; 6. Washington hour angle, in time, of the star at the time of true conjunction; 7. coördinate q at the time of true conjunction; 8. hourly variation p' of coördinate p ; 9. hourly variation q' of coördinate q ; 10. logarithmic sine of the star's declination; 11. logarithmic cosine of the star's declination.

Designating the time of true conjunction by the usual symbol, δ , we have, at this time, $T = \delta$, $h = H$, $p = 0$, and $q = Y$. For any other time during the occultation, we shall have $T = \delta + (t)$, $h = H +$ sidereal equivalent of (t) , $p = (t) p'$, and $q = Y + (t) q'$. The other elements are considered as constant for the occultation.

In the prediction of an occultation for a particular place, the principal objects of determination are, the instant of *immersion*, or of the star's disappearance behind the moon's limb; of *emersion*, or of the star's reappearance; and the points on the moon's border where these appearances take place.

The calculations are made according to the method of BESSEL, whose original paper on the subject may be found in SCHUMACHER'S *Astronomische Nachrichten*, Vol. VII. p. 1; also in the *Berliner Astronomisches Jahrbuch* for 1881, p. 257. The letters and numerals prefixed to the stars belonging to the group of the Pleiades, and the magnitudes of these stars, are taken from No. V. of BESSEL'S *Astronomische Untersuchungen*.

The process of computation is shown by the following equations:—

d = Longitude for Washington, of the place, + West, — East.

ϕ = Geographical North Latitude of the place.

ϕ' = Geocentric North Latitude of the place.

r = Earth's radius at the place, or the distance of the observer's position from the earth's centre.

It is unnecessary to calculate ϕ' and r separately, as we have

$$r \sin \phi' = \frac{(1 - e^2) \sin \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}} \quad r \cos \phi' = \frac{\cos \phi}{\sqrt{(1 - e^2 \sin^2 \phi)}}$$

in which e denotes the eccentricity of the earth's meridians.

The logarithms of $\frac{1 - e^2}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log A$, and of $\frac{1}{\sqrt{(1 - e^2 \sin^2 \phi)}} = \log B$, derived from $e = .081697$, according to the latest determination of BESSEL, may be taken from the following table, where the geographical latitude of the place is the argument.

ϕ	Log A	Log B
0	9.9971	0.0000
10	9.9971	0.0000
20	9.9973	0.0002
30	9.9975	0.0004
40	9.9977	0.0006
50	9.9979	0.0009
60	9.9982	0.0011
70	9.9984	0.0013

$$r \sin \phi' = A \sin \phi$$

$$r \cos \phi' = B \cos \phi$$

$$a = r \cos \phi' \sin (h - d)$$

$$b = r \cos \phi' \cos (h - d)$$

$$\log \lambda = 9.4192$$

$$u = a$$

$$v = r \sin \phi' \cos D - b \sin D$$

$$m \sin M = p - u$$

$$m \cos M = q - v$$

$$u' = b \lambda$$

$$v' = a \lambda \sin D$$

$$n \sin N = p' - u'$$

$$n \cos N = q' - v'$$

$$\log k = 9.4350$$

$$\cos \psi = \frac{m \sin (M - N)}{k}$$

$$Q = 90^\circ - N \mp \psi$$

$$t = -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n}$$

Upper signs for Immersion; under signs for Emersion.

$$c \sin C = u + t u'$$

$$c \cos C = v + t v'$$

$$V = Q + C$$

Mean solar time of the star's apparent contact with the moon's limb

$$= T - d + t$$

$$\text{Angle from North Point} = Q$$

$$\text{Angle from Vertex} = V$$

The angle ψ is to be taken out positive and less than 180° . If $\log m \sin (M - N)$ be greater than $\log k$, $\cos \psi$ will evidently be greater than 1, or impossible, and there will be no occultation, except in some rare instances where the moon's limb passes very close to the star, when the $\log \cos \psi$ will result very near 0. In these cases, a recalculation should be made according to the method which follows, using

$$t = -\frac{m}{n} \cos (M - N),$$

which may give $\log m \sin (M - N)$ less than $\log k$, when the star will be occulted. On the other hand, it may happen that, in these cases of very near approach, a first determination may give a $\cos \psi$ less than 1, which a recalculation will show to be impossible. The angle ψ is then to be considered $= 0^\circ$ when $m \sin (M - N)$ is positive, and we shall have $Q = 90^\circ - N$. When $m \sin (M - N)$ is negative, $\psi = 180^\circ$, or $Q = 90^\circ - N + 180^\circ = 270^\circ - N$. We shall also have, at the time of nearest approach,

$$\text{star's distance from moon's limb} = \pi (m \sin (M - N) - .2723),$$

in which π is the moon's horizontal parallax.

By *Angle from North Point* is to be understood the arc included between the star when in contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the North Pole; and by *Angle from Vertex*, the arc between the star at contact, and the point where the limb is intersected by an arc of a great circle passing from the moon's centre to the zenith. These angles are reckoned from the north point and from the vertex towards the *West* round the circumference of the moon's disc. For the image as seen in an inverting telescope, add to them 180° .

The results obtained by the above equations are only approximate, yet the computed times by immersion and emersion will usually be within one or two minutes of the truth. The error generally increases with the star's distance from the apparent path of the moon's centre, and may, in some cases, amount to several minutes. For an immersion, this error is not of much consequence; but for an emersion, especially of a small star, the time should be determined with greater precision. For this purpose u' and v' must be computed with

$$h' - d = h - d + \frac{1}{2} \mu,$$

μ being the symbol by which we express the sidereal equivalent of t in these equations.

$$\begin{aligned} u' &= r \cos \phi' \lambda \cos (h' - d) \\ v' &= r \cos \phi' \lambda \sin (h' - d) \sin D. \end{aligned}$$

Then with these values of u' and v' , recompute N , n , ψ , and t , by means of

$$\begin{aligned} n \sin N &= p' - u' \\ n \cos N &= q' - v' \\ \cos \psi &= \frac{m \sin (M - N)}{k} \\ t &= -\frac{m}{n} \cos (M - N) \mp \frac{k \sin \psi}{n} \end{aligned}$$

using the M and m obtained by the first computation, and we shall have the time of contact $T - d + t$, generally within a few seconds of the truth.

As a check on the accuracy of the work, we might compute

$$\begin{aligned} u &= r \cos \phi' \sin (h - d + \mu) \\ v &= r \sin \phi' \cos D - r \cos \phi' \sin D \cos (h - d + \mu) \end{aligned}$$

and we should have

$$(p + t p' - u)^2 + (q + t q' - v)^2 = k^2 = 0.0741.$$

But if $m \sin M$, $m \cos M$, $\log n \sin N$, and $\log n \cos N$, have been correctly computed, we shall have the following shorter and more convenient check on the subsequent calculations for the time of contact:

$$(m \sin M + t n \sin N)^2 + (m \cos M + t n \cos N)^2 = k^2 = 0.0741.$$

The elements of computation, H , Y , etc., are given for the instant of the moon's true conjunction with the star in right ascension. It is desirable, however, in computing an occultation for a particular place, to assume a time for the calculation near to the time of the nearest approach of the moon's centre to the star, as seen at that place, and to reduce the elements to this assumed time. This time, for which the nearest tenth of an hour will be sufficiently accurate, will not differ greatly from the time of *apparent* conjunction, as effected by parallax, which may be determined approximately by the following equations. Let $T - d$ be the time of apparent conjunction; then

$$\begin{aligned} (t) &= \frac{\sin (H - d)}{p' \sec \phi - [9.4027] \cos (H - d)} \\ T - d &= \delta - d + (t). \end{aligned}$$

The elements corresponding to the time $T - d$ may then be obtained as follows:

$$\begin{aligned} h - d &= H - d + (\mu) \\ p &= (t) p' \\ q &= Y + (t) q' \end{aligned}$$

Where occultations are to be generally observed, as at astronomical stations, either temporary or permanent, the observer will find an advantage in looking over the list and selecting, beforehand, all those which may be visible at his station, by observing if his latitude be included between the *limiting parallels* for any given occultation, if the time ($T-d$) be favorable as regards the absence of daylight, and if the star's hour-angle ($h-d$) be not greater than its semidiurnal arc for the given latitude.

For obtaining the time

$$T-d = \delta - d + (t),$$

it will be well to tabulate the values of

$$(t) = \frac{\sin(H-d)}{p' \sec \phi - [9.4027] \cos(H-d)}$$

for every half hour of $H-d$ as far as the greatest semidiurnal arc computed for the latitude of the station with a declination of 30° ; and for all values of p' , using two decimal figures, from 9.50 to 0.60.

It will also be found advantageous to have tabulated values of

$$u = r \cos \phi' \sin(h-d)$$

$$u' = r \cos \phi' \lambda \cos(h-d)$$

which should be given for every minute (in time) of $(h-d)$, from 0^h to 6^h . If $(h-d)$ exceeds 6^h , the argument will be $12^h - (h-d)$, instead of $(h-d)$. It will be seen by the equations that u will have the same sign as $\sin(h-d)$, and that u' will have the same sign as $\cos(h-d)$.

In the equation

$$v = r \sin \phi' \cos D - b \sin D$$

the term $r \sin \phi' \cos D$ may be tabulated for every tenth minute of declination, from 0° to 30° .

For a practical application of the preceding formulæ, we will make the calculations for an occultation of the star 130 Tauri, January 17, 1867, as it will appear at the Cambridge Observatory, Mass., in north latitude $42^\circ 22'.8 = \phi$, and east longitude from Washington $0^h 23^m 41^s = d$. The data for computation are given on page 415, and, with the latitude and longitude of the place, are as follows:—

January 17. 130 Tauri. 6.

$\phi + 42^\circ 22'.8$	$H - 3^h 6^m 57^s$	$p' 0.6136$
$d - 0^h 23.7$	$d - 0^h 23 41$	$q' + 0.0216$
$\delta 6 45.0$	$H - d - 2 43 16$	$\log \sin D + 9.4823$
$\delta - d 7 8.7$	$Y + 0.6109$	$\log \cos D + 9.9790$

Calculation of the Time, $T-d$, and reduction of the elements of computation.

	$\log p' 9.788$		$(t) - 1.0$
	$\log \sec \phi + 0.133$		
$\log p' \sec \phi =$	$\log (1) + 9.920$	(Reduced to hours and minutes)	$(t) - 1^h 0^m 0^s$
	$\log \text{constant } 9.403$	Sidereal equivalent for (t)	$(\mu) - 1^h 0^m 10^s$
	$\log \cos(H-d) + 9.879$		$H-d - 2 43 16$
$\log [9.403] \cos(H-d) =$	$\log (2) + 9.282$	$H-d + (\mu) =$	$h-d - 3 43 26$
	$(2) + .191$		$\delta - d 7 8.7$
	$(1) + .832$	$\delta - d + (t) =$	$T-d 6^h 8.7$
$(1) - (2) =$	$(3) + .641$	$(t) p' = -1 \times 0.6136 =$	$p - .6136$
	$\log (3) + 9.807$		$Y + .6109$
	$\log \sin(H-d) - 9.815$	$-1 \times 0.0216 =$	$(t) q' - .0216$
$\log \frac{\sin(H-d)}{(8)} =$	$\log (t) - 0.008$	$y + (t) q' =$	$q + .5893$

Calculation of the times of *Immersion* and *Emersion*, and of the *Angles of Position* of the star and moon.

(Table, page 509, Arg. ϕ)	$\log A$	9.9977	$\log m \sin M$	-7.1139			
	$\log \sin \phi$	+9.8287	$\log m \cos M$	+8.8837			
$\log A \sin \phi =$	$\log r \sin \phi'$	+9.8264	$\log \tan M$	-8.2302			
	$\log \cos D$	+9.9790	$\log \cos M$	+9.9999			
	$\log r \sin \phi' \cos D$	+9.8054	$\log m$	+8.8838			
(Table, page 509, Arg. ϕ)	$\log B$	0.0007	$\log n \sin N$	+9.7030			
	$\log \cos \phi$	+9.8684	$\log n \cos N$	+8.8476			
$\log B \cos \phi =$	$\log r \cos \phi'$	+9.8601	$\log \tan N$	+0.8554			
	$\log \sin (h-d)$	-9.9178	$\log \sin N$	+9.9958			
$\log r \cos \phi' \sin (h-d) = \log u = \log a$		-9.7869	$\log n$	+9.7072			
	$\log \cos (h-d)$	+9.7492	$-\log \frac{m}{n}$	-9.1766			
$\log r \cos \phi' \cos (h-d) =$	$\log b$	+9.6183	$\log \cos (M-N)$	+9.0849			
	$\log \lambda$	9.4192	$-\log \frac{m}{n} \cos (M-N) =$	$\log (1)$	-8.2615		
	$\log a \lambda$	-9.2061	$\log \sin (M-N)$	-9.9968			
	$\log \sin D$	+9.4823	$\log m \sin (M-N)$	-8.8806			
	$\log b \sin D$	+9.1006	$\log k$	9.4350			
$\log a \lambda \sin D =$	$\log v'$	-8.6884	$\log \frac{m \sin (M-N)}{k}$	$\log \cos \psi$	-9.4456		
$\log b \lambda =$	$\log u'$	+9.0375		$\log \sin \psi$	+9.9824		
	$r \sin \phi' \cos D +$	.6389		$\log k \sin \psi$	+9.4174	
	$b \sin D +$	.1261		$\log (2)$	+9.7102	
$r \sin \phi' \cos D - b \sin D =$	$v +$	.5128		(1)	-.0183	
	$q +$	.5893		(2)	+.5131	
$q - v =$	$m \cos M +$	.0765	For Immersion, (1) - (2) =	t_1	-.5314	
	$p -$	.6136	For Emergence, (1) + (2) =	t_2	+.4948	
	$u -$	.6123		$\log t_1$	-9.7254	
$p - u =$	$m \sin M -$	.0013		$\log u'$	+9.0375	
	$q' +$	.0216		$\log t_1 u'$	-8.7629	
	$v' -$	.0488		$\log v'$	-8.6884	
$q' - v' =$	$n \cos N +$	.0704		$\log t_1 v'$	+8.4138	
	$p' +$	.6136		$t_1 v' +$	.0259
	$u' +$	.1090		$v +$	.5128
$p' - u' =$	$n \sin N +$	.5046	$v + t_1 v' =$	$c \cos C +$	.5387
				$t_1 u' -$	.0579	
	M	359° 2'		$u -$	.6123	
	N	82 3	$u + t_1 u' =$	$c \sin C -$	.6702	
	$M - N$	276 59		$\log c \sin C$	-9.8262		
$90^\circ - N$		7 57		$\log c \cos C$	+9.7314		
	ψ	106 12		$\log \tan C$	-9.0948		
For Immersion, $90^\circ - N - \psi =$	Q	261 45					
				$T - d$	6 8.7		
				(Reduced to hours and minutes.)	$t_1 - 0$	31.9	
					$T - d + t_1$	5 36.8	
					$C - 51^\circ 12'$		
					Q	261 45	
					V	210 33	
					(Reduced to hours and minutes.)	$t_2 + 0$	29.7
					$T - d + t_2$	6 38.4	

IMMERSION: Cambridge Mean Time

Immersion Angle from North Point =

Immersion Angle from Vertex = $Q + C$ =

EMERSION: Observatory Mean Time

(Reduced to hours and minutes.)

$T - d + t_2$ 6 38.4

Calculation of a more accurate time, etc., of *Emersion*.

	$h - d - 3^h 43^m 26^s$	From first determination,	$M \quad 359^{\circ} 2'$
Sidereal equiv. for $\frac{1}{2} t_2 =$	$\frac{1}{2} \mu + 14 \ 50$		$N \quad 82 \ 9$
$h - d + \frac{1}{2} \mu =$	$h' - d - 3 \ 28 \ 36$		$M - N \quad 276 \ 53$
	$\log \cos (h' - d) + 9.7879$		$90^{\circ} - N \quad 7 \ 51$
	$\log r \cos \phi' + 9.8691$		$\psi \quad 106 \ 12$
	$\log \lambda \quad 9.4192$	For Emersion, $90^{\circ} - N + \psi =$	$Q \quad 114 \ 3$
$\log r \cos \phi' \lambda \cos (h' - d) =$	$\log u' + 9.0762$		
	$\log \sin (h' - d) - 9.8974$		(1) - .0184
	$\log r \cos \phi' \lambda + 9.2883$		(2) + .5238
	$\log \sin D - 9.4823$	(1) + (2) =	$t + .5054$
$\log r \cos \phi' \lambda \sin (h' - d) \sin D =$	$\log v' - 8.6680$		$\log t + 9.7036$
	$v' - .0466$		$\log n \sin N + 9.6941$
	$q' + .0216$		$\log n t \sin N + 9.3977$
$q' - v' =$	$n \cos N - .0682$		$\log n \cos N + 8.8338$
	$u' + .1192$		$\log n t \cos N + 8.5374$
	$p' + .6136$		$n t \cos N + .0345$
$p' - u' =$	$n \sin N + .4944$	From first determination,	$m \cos M + .0765$
	$\log n \sin N + 9.6941$	$m \cos M + n t \cos N =$	(3) + .1110
	$\log n \cos N + 8.8338$	From first determination,	$n t \sin N + .2498$
	$\log \tan N + 0.8603$	$m \sin M + n t \sin N =$	$m \sin M - .0013$
	$\log \sin N + 9.9959$		(4) .2485
	$\log n + 9.6982$		(4) ² .0618
From first determination,	$\log m + 8.8838$		(3) ² .0123
	$-\log \frac{m}{n} - 0.1856$	(3) ² + (4) ² = $k^2 = 0.0741$,	Check .0741
	$\log \cos (M - N) + 9.0786$		$\log u' + 9.0762$
	$\log \sin (M - N) - 9.9969$		$\log t u' + 8.7798$
	$\log m \sin (M - N) - 8.8807$		$\log v' - 8.6680$
	$\log k \quad 9.4350$		$\log t v' - 8.3716$
	$\log \cos \psi - 9.4457$	From first determination,	$t v' - .0235$
	$\log \sin \psi + 9.9824$	$v + t v' =$	$\phi + .5128$
	$\log k \sin \psi + 9.4174$		$c \cos C + .4893$
$\log \frac{k \sin \psi}{n} =$	$\log (2) + 9.7192$	From first determination,	$t u' + .0602$
$-\log \frac{m}{n} \cos (M - N) =$	$\log (1) - 8.2542$	$u + t u' =$	$u - .6123$
			$c \sin C - .5521$
			$\log c \sin C - 9.7420$
			$\log c \cos C + 9.6896$
			$\log \tan C - 0.0624$
			$T - d \quad 6^h \ 8^m$
		(Reduced to hours and minutes,)	$t + \quad 30.3$
EMERSION: Observatory Mean Time		$T - d + t$	$6 \ 39.0$
			$C - \quad 48^{\circ} \ 27'$
Emersion Angle from North Point =		Q	$114 \ 3$
Emersion Angle from Vertex = $Q + C =$		V	$65 \ 36$

The last three pages of the Occultations contain a list of such occultations and near approaches as will be visible at Washington during the year 1867. For the latter, the time of nearest approach is given, followed by the distance of the star from the moon's limb at this time.

In the Appendix will be found a list of occultations visible between 30° and 45° north latitude and $1^h \ 30^m$ and 3^h longitude west from Washington, predicted by means of the instrument invented by Rev. THOMAS HILL. The times of immersion and emersion, in Washington mean time, and the angle from the vertex are given for every 5° of latitude and every 30^m of longitude between the above limits, and can easily be found by interpolation for any intermediate points.

This list gives most of the occultations, but not *every* occultation, visible at any given place within the above limits.

The Tables of *Jupiter's Satellites* embrace, —

A list of the occultations, eclipses, transits, and transits of shadows, in the order of the time of the occurrence of the phenomena for the satellites taken promiscuously. They are given for every month, accompanied with a diagram, constructed for the eclipse which occurs nearest the middle of the month, showing the phases of the eclipses for an inverting telescope.

A table containing the mean time of the geocentric superior conjunction, and the rectangular coördinates of the satellites corresponding to the time from the next preceding superior conjunction, at intervals of twenty minutes for the first satellite, of forty minutes for the second, of one hour and twenty minutes for the third, and of three hours for the fourth satellite. They are also given for the time of eclipse for the first, second, and third satellites at intervals of seven days, and for the fourth for every eclipse. They enable the astronomer to obtain the configurations at all times. They are given in seconds of arc.

The coördinates have their origin in the centre of the primary, and are referred to the major and minor axes of the apparent ellipse described by the path of the satellite.

The major axis of this ellipse is constant, for the earth's mean place; but the minor axis takes all values from the positive and negative maxima to zero, owing to the changes in the earth's elevation above the plane of the satellite's orbit.

The values in the table correspond to the maximum value of the conjugate axis, as seen from the sun or that of the mean maximum for the earth (which is a constant value). Factors are given in an adjoining column, at intervals of seven days for the first, second, and third satellites, and seventeen days for the fourth, to reduce the above values to those corresponding to the axis for the time being; also for the same intervals, the angle of inclination of the northern semi-minor axis to the circle of declination.

x is positive after superior conjunction, or on the east side of the planet; negative before superior conjunction, or on the west side. y will be positive north, negative south. The eclipses, occultations, &c. of the satellites, visible at Washington, that is, those which occur when the sun is 8° below and Jupiter 8° above the horizon, are distinguished by a W. placed after the name of the phase.

APPENDIX.

CONSTRUCTION OF THE ASTRONOMICAL AND NAUTICAL EPHEMERIDES FOR 1867.

—

THE Precession of the Equinoxes, the Mean Obliquity of the Ecliptic, and the Constant of Aberration (p. 250) are taken from STRUVE and PETERS. They are:—

$$\begin{aligned}\text{Precession}^* &= 50''.2411 + 0''.0002268 t, \\ \text{Obliquity}^\dagger &= 23^\circ 27' 54''.22 - 0''.4645 t - 0''.0000014 t^2, \\ \text{Aberration}^\ddagger &= 20''.4451 \pm 0''.0111,\end{aligned}$$

in which t is the number of years after 1800.

The Nutation of the Apparent Obliquity and the Equation of the Equinoxes are computed from PETERS' formulas given in his *Numerus Constantis Nutationis*, pp. 46–48, and reprinted in the volume of this Ephemeris for 1855. These quantities have been used in all computations relating to the Fixed Stars.

In the Ephemerides of the Sun, of the Moon, and of the Planets, the obliquity of the ecliptic of HANSEN's *Tables of the Sun* has been used; no reduction for the difference, $0''.37$, by which HANSEN's exceeds PETERS' obliquity having been made in this volume.

The General Constants for Star Reduction are computed from tables adapted to the formulas given on page 261.

The Mean Places of 48 Northern Circumpolar Stars, and the Mean Right Ascension of 128 "Time Stars," have been taken from the *Standard Mean Right Ascensions of Circumpolar and Time Stars, prepared for the use of the U. S. Coast Survey* by Dr. B. A. GOULD. Washington, 1862. The Mean Places of 4 Southern Circumpolar Stars are from the Mean Places of "100 Principal Fixed Stars for Jan. 1, 1840," printed in the *British Nautical Almanac* for 1848. The Mean Declinations of the "Time Stars" have been derived from the Mean Declinations for the beginning of the year 1865, the authorities for which may be found by reference to the Appendix to the *American Ephemeris and Nautical Almanac* for 1865.

In the Nomenclature of the Fixed Stars, (H.) signifies that the star is denoted by HEVELIUS' number, (B.) that the notation of BODE is used. Duplicate notations have been added where it would facilitate reference to ARGELANDER's *Uranometria Nova*. "Groombridge 2320" is the star 87 (B.) Draconis, and "12 Year Cat. 1879" is the last star in Draco in the *Uranometria Nova*.

The magnitudes, except of stars south of -40° dec., are ARGELANDER's.

The reductions from the Mean to the Apparent Places of the Circumpolar Stars have been

* PETERS' *Numerus Constantis Nutationis*, p. 71.

† Ibid., pp. 66 and 71.

‡ STRUVE's *Constant de l'Aberration*, p. 47.

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computed by the first set of formulas given on p. 261, using, for the Northern stars, the values of a, b, c, d derived from the *Standard Mean Right Ascensions*, &c. The terms

$$\begin{aligned} & - 0.00405 a \sin 2 \zeta - 0''.0886 b \cos 2 \zeta \text{ for the R. A.} \\ & - 0.00405 a' \sin 2 \zeta - 0''.0886 b' \cos 2 \zeta \text{ for the Dec.} \end{aligned}$$

have been applied to the places of α, ϵ, δ , and λ Ursæ Minoris; in which a, a', b, b' , are defined on p. 261; and ζ denotes the moon's mean longitude. The Table on p. 14 of the Appendix contains the values of these terms for seven stars, computed for 1870.0. The reductions of 44 stars have been taken directly from WOLFFERS' *Tabulæ Reductionum*, including the addition to the mean right ascension of Sirius of the term given by PETERS,*

$$q = 0''.127 + 0''.00050 (t - 1800) + 0''.171 \sin (u + 77^\circ 44'),$$

in which u , the eccentric anomaly from the inferior apsis, is found by the formula

$$u - e \sin u = n (t - T'),$$

from the elements

T = Passage through the inferior apsis	1791.431
n = Mean annual motion in orbit	$7^\circ.1865$
Period of revolution	$50''.093$
e = Eccentricity	0.7994

The reductions of the remaining 106 stars have been taken from Tables, similar to those of WOLFFERS, now in course of preparation, and representing the same terms of BESSEL's formulas (with PETERS' coefficients) as those given on p. 261, omitting the two small terms in the value of E .

The Mean Places of the Moon-culminating Stars have been taken from the *Almanac Catalogue of Zodiacal Stars, printed for the use of the American Ephemeris and Nautical Almanac*, Bureau of Navigation, Washington, 1864.

The Ephemeris of the Sun is constructed from the Tables of HANSEN and OLUFSEN, Copenhagen, 1853. In the computation of the Sun's Geocentric Coördinates, regard has been had to the sun's latitude; the computation has been made by means of the formulas given in the *Construction of the Almanac* for 1855.

ENCKE's discussion of the Transits of Venus in 1761 and 1769, in his *Der Venusdurchgang von 1769*, &c., has furnished the standard

$$\text{Equatorial Horizontal Parallax at the Earth's Mean Distance} = 8''.5776.$$

The Sun's Semidiameter at the Earth's Mean Distance has been taken equal to $16' 2''$.

The Ephemeris of the Moon has been constructed from PEIRCE's *Tables of the Moon*, with the *Tables of the Moon's Parallax*, constructed from WALKER's and ADAMS' formulas, and arranged as a supplement to the first edition of PEIRCE's *Tables of the Moon*.

The Semidiameter of the Moon at the Earth's Mean Distance is taken to be $\frac{1}{510}$ part greater than that given by BURCKHARDT, although that given by BURCKHARDT is probably better adapted to the computation of eclipses and occultations.

The Ephemeris of Mercury has been derived from the Tables of Prof. WINLOCK, which are based on the theory of LE VERRIER, published in the *Additions to the Connaissance des Temps* for 1848.

The Ephemeris of Venus has been derived from manuscript Tables, constructed from LINDENAU's Tables, in a form similar to that adopted for the Lunar Tables: applying AIRY's

* *Astronomische Nachrichten*, Nr. 748, "Elemente V."

CONSTRUCTION OF THE ALMANAC.

Long Equation and the corrections proceeding from the discussion, by the method of Least Squares, of Mr. HUGH BREEN's results contained in his paper on the *Corrections of LINDENAU's Elements of the Orbit of Venus, &c.*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XVIII.; and adopting the secular variations of the elements from LE VERRIER's *Memoir on the Determination of the Secular Inequalities of the Planets*, which appeared in the *Connaissance des Temps* for the year 1844. The following are the corresponding corrected elements, and annual variations for Washington, 1855.0.

$$\begin{aligned} L &= 289^{\circ} 51' 58.5 \\ \pi &= 129\ 32\ 59.6 + 49.57459 \text{ t.} \\ \Omega &= 75\ 23\ 27.3 + 32.88424 \text{ t.} \\ i &= 3\ 23\ 34.6 + 0.04363 \text{ t.} \\ e &= 1410''.6847 - 0.11157 \text{ t.} \\ n &= 2106641.438 \\ a &= 0.7233323 \end{aligned}$$

The Ephemeris of Mars is derived from manuscript Tables constructed from LINDENAU's Tables in the same manner as the Tables of Venus. Mr. HUGH BREEN's results contained in his paper *On the Corrections of LINDENAU's Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX., have also been discussed and applied; and LE VERRIER's secular variations of the elements are likewise adopted. The following are the corresponding corrected elements, and secular variations for Washington, 1855.0.

$$\begin{aligned} L &= 320^{\circ} 13' 33.71 \\ \pi &= 333\ 23\ 17.80 + 65.99145 \text{ t.} \\ \Omega &= 48\ 25\ 55.18 + 27.68294 \text{ t.} \\ i &= 1\ 51\ 2.20 - 0.02141 \text{ t.} \\ e &= 19238''.75 + 0.18549 \text{ t.} \\ n &= 689050.9023 \\ a &= 1.5236878 \end{aligned}$$

The Ephemeris of Jupiter is derived from manuscript Tables constructed from BOUVARD's Tables, with such changes as were required to make them correspond more nearly to the formulas.

The Ephemeris of Saturn is also derived from manuscript Tables constructed from the Tables of BOUVARD, with changes having the same object. The mass of Jupiter given by BESSEL has been adopted and used.

This mass = $\frac{1}{1047.879 \pm 0.235}$ of the sun's mass.

The following corrections of the elements have also been introduced for 1865:—

corr. mean long.	= +4''.9
corr. long. of node	= -143''.4
corr. inclination	= -5''.7.

The Ephemeris of Uranus is derived from the elliptical portion of BOUVARD's Tables, with LE VERRIER's corrections and perturbations caused by Jupiter and Saturn, contained in his *Recherches sur les Mouvements de la Planète Herschel (dite Uranus)*, published in the *Connaissance des Temps* for 1849, and also PEIRCE's corrections and perturbations arising from the influence of Neptune.

The combined corrections of the elements deduced by PEIRCE for January 1, 1800, are as follows:—

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corr. mean distance = $+0.000942$
 corr. mean motion = $-1''.13560$
 corr. eccentricity = -0.0003626
 corr. long. of per. = $+8252''.4$
 corr. long. of epoch = $+2575''.4$

The Ephemeris of Neptune is derived from PEIRCE's theory and WALKER's orbit.
 The eclipses and elongations of Jupiter's Satellites are computed from DAMOISEAU's Tables.
 The semidiameters of the Planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 \pm 0.086	0.00	PEIRCE, from the Washington Observations of 1845 and 1846, made with the mural circle.
Mars (polar)	2.842 \pm 0.057	0.25	
Jupiter (polar)	18.78 \pm 0.067	0.70	
Saturn (polar)	8.77 \pm 0.039	0.95	
Uranus	1.68 \pm 0.3	1.80	

To correspond to the apparent semidiameters observed with the Washington mural circle, all the semidiameters, except those of Mercury, computed from these values, must be increased by the constant quantity, $0''.57$.

The apparent elements of Saturn's Rings are computed from BESSEL's data, except those for Bond's dusky ring.

The elements of the eclipse are adapted to the modification of BESSEL's formulas, suggested by T. HENRY SAFFORD, Jr. The formulas are to be found in PEIRCE's Spherical Astronomy.

The elements adapted to BESSEL's formulas are given for all occultations of stars greater than those of the sixth magnitude.

The Heliocentric Coördinates of the Planets are given for the computation of perturbations, and the following are the values of the masses, that of the Sun being unity:—

Mercury	$\frac{1}{4865751}$	ENCKE, <i>A. N.</i> , No. 443.
Venus	$\frac{1}{390000}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 115.
The Earth	$\frac{1}{354936}$	LE VERRIER, <i>Théor. de Merc.</i> , p. 26.
Mars	$\frac{1}{2680637}$	BURCKHARDT, <i>Conn. des Temps</i> , 1816, p. 343.
Jupiter	$\frac{1}{1047.879 \pm 0.235}$	BESSEL, <i>Die Masse des Jupiter</i> , p. 64.
Saturn	$\frac{1}{3501.6}$	BESSEL, <i>Comptes Rendus</i> , 1841.
Uranus	$\frac{1}{24905}$	LAMONT, <i>Mem. Ast. Soc.</i> , Vol. XI. p. 54.
Neptune	$\frac{1}{18780}$	PEIRCE, <i>Am. Ac. Proc.</i> , Vol. I. p. 333.

The intervals of original computation have in all cases been made sufficiently small to authorize the use of the differences as a check of the accuracy of the work. The results have also been tested, in various portions, by means of duplicate computations. The proofs from the electrotypes plates have been thoroughly examined by an independent series of differences. And it is believed that, in every respect, that system has been adopted in which accuracy was most likely to be secured.

CONSTRUCTION OF THE ALMANAC.

The principal computations of the Ephemeris have been distributed in the following manner:—

The Sun has been computed by Mr. EASTWOOD; the Ephemeris of the Moon, by Mr. FERREL and Professor RUNKLE; and the Lunar Distances, by Mr. FERREL and Mr. LOOMIS. Mercury has been computed by Mr. BRADFORD and Professor VAN VLECK, Venus by Miss MITCHELL, Mars by Mr. EASTWOOD, Jupiter by Professor KENDALL, Saturn by Professor VAN VLECK, Uranus by Mr. FERREL, and Neptune by Professor KENDALL. The Fixed Stars and the General Constants for Reduction have been computed by Mr. BARTLETT and Mr. HILL, and the Occultations by Mr. DOWNES. The Eclipses have been computed and the Charts projected by Mr. WRIGHT.

MOON'S LIBRATION.

TABLE FOR THE LIBRATION OF THE MOON.

$\Omega - \lambda$	$\Delta \lambda$	α^{-1}	B	$\Omega - \lambda$	$\Omega - \lambda$	$\Delta \lambda$	α^{-1}	B	$\Omega - \lambda$
0	0.0	39	0 0.0	180	0	0.6	56	1 3.9	134
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					

$\Delta \lambda$ has the sign of $\tan. (\lambda - \Omega)$

α has the sign of $\cos. (\Omega - \lambda)$

B has the sign of $\sin. (\Omega - \lambda)$

When $\Omega - \lambda$ exceeds 180° the table is to be entered with $(\Omega - \lambda) - 180^\circ$ as the argument in the column $\Omega - \lambda$.

TABLE.

TABLE SHOWING THE CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	14	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	15	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	15	16	16	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	15	16	17	17

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0 10	2 50	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7	
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	11	11	11	11	12	12	12	13	13	13	
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	15	15	16	16	16	17	17	17	18	18	
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22	22	
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	23	23	23	24	24	25	26	
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30	
1 20	1 40	17	18	18	19	19	20	20	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	32	
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	29	30	31	31	32	33	

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138								
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s								
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
0 10	2 50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9								
0 20	2 40	13	13	13	14	14	14	14	15	15	15	15	15	15	16	16	16	16	17								
0 30	2 30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	24								
0 40	2 20	23	23	23	24	24	25	25	25	26	26	27	27	27	28	28	29	29	30								
0 50	2 10	26	26	27	27	28	29	29	29	30	30	31	31	31	32	32	33	33	34								
1 0	2 0	29	29	30	30	31	31	32	32	33	33	34	34	35	35	36	37	37	38								
1 10	1 50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	39	40	41								
1 20	1 40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42								
1 30	1 30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43								

The Correction is to be added to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.
m.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s. s.
0	0 00.000	0 09.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 08.807	1 08.807
1	0 00.164	0 09.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 08.971	1 09.003
2	0 00.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 09.135	2 005
3	0 00.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 09.298	3 008
4	0 00.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 09.462	4 011
5	0 00.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 09.626	5 014
6	0 00.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 09.790	6 016
7	0 01.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 00.124	1 09.954	7 019
8	0 01.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 00.288	1 10.118	8 022
9	0 01.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 00.452	1 10.281	9 025
10	0 01.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 00.616	1 10.445	10 027
11	0 01.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 00.779	1 10.609	11 030
12	0 01.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 00.943	1 10.773	12 033
13	0 02.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 01.107	1 10.937	13 035
14	0 02.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 01.271	1 11.100	14 038
15	0 02.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 01.435	1 11.264	15 041
16	0 02.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 01.599	1 11.428	16 044
17	0 02.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 01.762	1 11.592	17 046
18	0 02.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 01.926	1 11.756	18 049
19	0 03.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 02.090	1 11.920	19 052
20	0 03.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 02.254	1 12.083	20 055
21	0 03.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 02.418	1 12.247	21 057
22	0 03.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 02.582	1 12.411	22 060
23	0 03.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 02.745	1 12.575	23 063
24	0 03.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 02.909	1 12.739	24 066
25	0 04.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 03.073	1 12.903	25 068
26	0 04.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 03.237	1 13.066	26 071
27	0 04.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 03.401	1 13.230	27 074
28	0 04.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 03.564	1 13.394	28 076
29	0 04.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 03.728	1 13.558	29 079
30	0 04.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 03.892	1 13.722	30 082
31	0 05.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 04.056	1 13.886	31 085
32	0 05.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 04.220	1 14.049	32 087
33	0 05.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 04.384	1 14.213	33 090
34	0 05.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 04.547	1 14.377	34 093
35	0 05.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 04.711	1 14.541	35 096
36	0 05.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 04.875	1 14.705	36 098
37	0 06.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 05.039	1 14.868	37 101
38	0 06.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 05.203	1 15.032	38 104
39	0 06.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 05.367	1 15.196	39 106
40	0 06.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 05.530	1 15.360	40 109
41	0 06.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 05.694	1 15.524	41 112
42	0 06.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 05.858	1 15.688	42 115
43	0 07.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 06.022	1 15.851	43 117
44	0 07.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 06.186	1 16.015	44 120
45	0 07.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 06.350	1 16.179	45 123
46	0 07.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 06.513	1 16.343	46 126
47	0 07.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 06.677	1 16.507	47 128
48	0 07.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 06.841	1 16.671	48 131
49	0 08.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 07.005	1 16.834	49 134
50	0 08.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 07.169	1 16.998	50 137
51	0 08.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 07.332	1 17.162	51 139
52	0 08.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 07.496	1 17.326	52 142
53	0 08.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 07.660	1 17.490	53 145
54	0 08.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 07.824	1 17.654	54 147
55	0 09.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 07.988	1 17.817	55 150
56	0 09.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 08.152	1 17.981	56 153
57	0 09.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 08.315	1 18.145	57 156
58	0 09.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 08.479	1 18.309	58 158
59	0 09.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 08.643	1 18.473	59 161

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal	8 h.	9 h.	10 h.	11 h.	12 h.	13 h.	14 h.	15 h.	For Seconds.
m.	m.	m.	m.	m.	m.	m.	m.	m.	s.
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 07.784	2 17.614	2 27.443	1 0.003
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 07.948	2 17.778	2 27.607	2 .005
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 08.112	2 17.941	2 27.771	3 .008
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 08.276	2 18.105	2 27.935	4 .011
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 08.440	2 18.269	2 28.099	5 .014
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 08.603	2 18.433	2 28.263	6 .016
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 08.767	2 18.597	2 28.426	7 .019
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 08.931	2 18.761	2 28.590	8 .022
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 09.095	2 18.924	2 28.754	9 .025
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 09.259	2 19.088	2 28.918	10 .027
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 09.423	2 19.252	2 29.082	11 .030
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 09.586	2 19.416	2 29.245	12 .033
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 09.750	2 19.580	2 29.409	13 .035
13	1 20.766	1 30.596	1 40.425	1 50.255	2 00.084	2 09.914	2 19.744	2 29.573	14 .038
14	1 20.930	1 30.760	1 40.589	1 50.419	2 00.248	2 10.078	2 19.907	2 29.737	15 .041
15	1 21.094	1 30.923	1 40.753	1 50.583	2 00.412	2 10.242	2 20.071	2 29.901	16 .044
16	1 21.258	1 31.087	1 40.917	1 50.746	2 00.576	2 10.405	2 20.235	2 30.065	17 .046
17	1 21.422	1 31.251	1 41.081	1 50.910	2 00.740	2 10.569	2 20.399	2 30.228	18 .049
18	1 21.585	1 31.415	1 41.244	1 51.074	2 00.904	2 10.733	2 20.563	2 30.392	19 .052
19	1 21.749	1 31.579	1 41.408	1 51.238	2 01.067	2 10.897	2 20.727	2 30.556	20 .055
20	1 21.913	1 31.743	1 41.572	1 51.402	2 01.231	2 11.061	2 20.890	2 30.720	21 .057
21	1 22.077	1 31.906	1 41.736	1 51.565	2 01.395	2 11.225	2 21.054	2 30.884	22 .060
22	1 22.241	1 32.070	1 41.900	1 51.729	2 01.559	2 11.388	2 21.218	2 31.048	23 .063
23	1 22.404	1 32.234	1 42.064	1 51.893	2 01.723	2 11.552	2 21.382	2 31.211	24 .066
24	1 22.568	1 32.398	1 42.227	1 52.057	2 01.887	2 11.716	2 21.546	2 31.375	25 .068
25	1 22.732	1 32.562	1 42.391	1 52.221	2 02.050	2 11.880	2 21.709	2 31.539	26 .071
26	1 22.896	1 32.726	1 42.555	1 52.385	2 02.214	2 12.044	2 21.873	2 31.703	27 .074
27	1 23.060	1 32.889	1 42.719	1 52.548	2 02.378	2 12.208	2 22.037	2 31.867	28 .076
28	1 23.224	1 33.053	1 42.883	1 52.712	2 02.542	2 12.371	2 22.201	2 32.031	29 .079
29	1 23.387	1 33.217	1 43.047	1 52.876	2 02.706	2 12.535	2 22.365	2 32.194	30 .082
30	1 23.551	1 33.381	1 43.210	1 53.040	2 02.869	2 12.699	2 22.529	2 32.358	31 .085
31	1 23.715	1 33.545	1 43.374	1 53.204	2 03.033	2 12.863	2 22.692	2 32.522	32 .087
32	1 23.879	1 33.708	1 43.538	1 53.368	2 03.197	2 13.027	2 22.856	2 32.686	33 .090
33	1 24.043	1 33.872	1 43.702	1 53.531	2 03.361	2 13.191	2 23.020	2 32.850	34 .093
34	1 24.207	1 34.036	1 43.866	1 53.695	2 03.525	2 13.354	2 23.184	2 33.013	35 .096
35	1 24.370	1 34.200	1 44.029	1 53.859	2 03.689	2 13.518	2 23.348	2 33.177	36 .098
36	1 24.534	1 34.364	1 44.193	1 54.023	2 03.852	2 13.682	2 23.512	2 33.341	37 .101
37	1 24.698	1 34.528	1 44.357	1 54.187	2 04.016	2 13.846	2 23.675	2 33.505	38 .104
38	1 24.862	1 34.691	1 44.521	1 54.351	2 04.180	2 14.010	2 23.839	2 33.669	39 .106
39	1 25.026	1 34.855	1 44.685	1 54.514	2 04.344	2 14.173	2 24.003	2 33.833	40 .109
40	1 25.190	1 35.019	1 44.849	1 54.678	2 04.508	2 14.337	2 24.167	2 33.996	41 .112
41	1 25.353	1 35.183	1 45.012	1 54.842	2 04.672	2 14.501	2 24.331	2 34.160	42 .115
42	1 25.517	1 35.347	1 45.176	1 55.006	2 04.835	2 14.665	2 24.495	2 34.324	43 .117
43	1 25.681	1 35.511	1 45.340	1 55.170	2 04.999	2 14.829	2 24.658	2 34.488	44 .120
44	1 25.845	1 35.674	1 45.504	1 55.333	2 05.163	2 14.993	2 24.822	2 34.652	45 .123
45	1 26.009	1 35.838	1 45.668	1 55.497	2 05.327	2 15.156	2 24.986	2 34.816	46 .126
46	1 26.172	1 36.002	1 45.832	1 55.661	2 05.491	2 15.320	2 25.150	2 34.979	47 .128
47	1 26.336	1 36.166	1 45.995	1 55.825	2 05.655	2 15.484	2 25.314	2 35.143	48 .131
48	1 26.500	1 36.330	1 46.159	1 55.989	2 05.818	2 15.648	2 25.477	2 35.307	49 .134
49	1 26.664	1 36.493	1 46.323	1 56.153	2 05.982	2 15.812	2 25.641	2 35.471	50 .137
50	1 26.828	1 36.657	1 46.487	1 56.316	2 06.146	2 15.976	2 25.805	2 35.635	51 .139
51	1 26.992	1 36.821	1 46.651	1 56.480	2 06.310	2 16.139	2 25.969	2 35.798	52 .142
52	1 27.155	1 36.985	1 46.815	1 56.644	2 06.474	2 16.303	2 26.133	2 35.962	53 .145
53	1 27.319	1 37.149	1 46.978	1 56.808	2 06.637	2 16.467	2 26.297	2 36.126	54 .147
54	1 27.483	1 37.313	1 47.142	1 56.972	2 06.801	2 16.631	2 26.460	2 36.290	55 .150
55	1 27.647	1 37.476	1 47.306	1 57.136	2 06.965	2 16.795	2 26.624	2 36.454	56 .153
56	1 27.811	1 37.640	1 47.470	1 57.299	2 07.129	2 16.959	2 26.788	2 36.618	57 .156
57	1 27.975	1 37.804	1 47.634	1 57.463	2 07.293	2 17.122	2 26.952	2 36.781	58 .158
58	1 28.138	1 37.968	1 47.797	1 57.627	2 07.457	2 17.286	2 27.116	2 36.945	59 .161
59	1 28.302	1 38.132	1 47.961	1 57.791	2 07.620	2 17.450	2 27.280	2 37.109	

TABLE II. SIDEREAL INTO MEAN SOLAR TIME.

Sidereal.	16 ^h .	17 ^h .	18 ^h .	19 ^h .	20 ^h .	21 ^h .	22 ^h .	23 ^h .	For Seconds.
0	2 37.273	2 47.102	2 56.932	3 06.762	3 16.591	3 26.421	3 36.250	3 46.080	1 0.003
1	2 37.437	2 47.266	2 57.096	3 06.925	3 16.755	3 26.585	3 36.414	3 46.244	2 .005
2	2 37.601	2 47.430	2 57.260	3 07.089	3 16.919	3 26.748	3 36.578	3 46.407	3 .008
3	2 37.764	2 47.594	2 57.424	3 07.253	3 17.083	3 26.912	3 36.742	3 46.571	4 .011
4	2 37.928	2 47.758	2 57.587	3 07.417	3 17.246	3 27.076	3 36.906	3 46.735	5 .014
5	2 38.092	2 47.922	2 57.751	3 07.581	3 17.410	3 27.240	3 37.069	3 46.899	6 .016
6	2 38.256	2 48.085	2 57.915	3 07.745	3 17.574	3 27.404	3 37.233	3 47.063	7 .019
7	2 38.420	2 48.249	2 58.079	3 07.908	3 17.738	3 27.568	3 37.397	3 47.227	8 .022
8	2 38.584	2 48.413	2 58.243	3 08.072	3 17.902	3 27.731	3 37.561	3 47.390	9 .025
9	2 38.747	2 48.577	2 58.406	3 08.236	3 18.066	3 27.895	3 37.725	3 47.554	10 .027
10	2 38.911	2 48.741	2 58.570	3 08.400	3 18.229	3 28.059	3 37.889	3 47.718	11 .030
11	2 39.075	2 48.905	2 58.734	3 08.564	3 18.393	3 28.223	3 38.052	3 47.882	12 .033
12	2 39.239	2 49.068	2 58.898	3 08.728	3 18.557	3 28.387	3 38.216	3 48.046	13 .035
13	2 39.403	2 49.232	2 59.062	3 08.891	3 18.721	3 28.550	3 38.380	3 48.210	14 .038
14	2 39.566	2 49.396	2 59.226	3 09.055	3 18.885	3 28.714	3 38.544	3 48.373	15 .041
15	2 39.730	2 49.560	2 59.389	3 09.219	3 19.049	3 28.878	3 38.708	3 48.537	16 .044
16	2 39.894	2 49.724	2 59.553	3 09.383	3 19.212	3 29.042	3 38.871	3 48.701	17 .046
17	2 40.058	2 49.888	2 59.717	3 09.547	3 19.376	3 29.206	3 39.035	3 48.865	18 .049
18	2 40.222	2 50.051	2 59.881	3 09.710	3 19.540	3 29.370	3 39.199	3 49.029	19 .052
19	2 40.386	2 50.215	3 00.045	3 09.874	3 19.704	3 29.533	3 39.363	3 49.193	20 .055
20	2 40.549	2 50.379	3 00.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	21 .057
21	2 40.713	2 50.543	3 00.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	22 .060
22	2 40.877	2 50.707	3 00.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	23 .063
23	2 41.041	2 50.870	3 00.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	24 .066
24	2 41.205	2 51.034	3 00.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	25 .068
25	2 41.369	2 51.198	3 01.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	26 .071
26	2 41.532	2 51.362	3 01.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	27 .074
27	2 41.696	2 51.526	3 01.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	28 .076
28	2 41.860	2 51.690	3 01.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	29 .079
29	2 42.024	2 51.853	3 01.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	30 .082
30	2 42.188	2 52.017	3 01.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	31 .085
31	2 42.352	2 52.181	3 02.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	32 .087
32	2 42.515	2 52.345	3 02.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	33 .090
33	2 42.679	2 52.509	3 02.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	34 .093
34	2 42.843	2 52.673	3 02.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	35 .096
35	2 43.007	2 52.836	3 02.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	36 .098
36	2 43.171	2 53.000	3 02.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	37 .101
37	2 43.334	2 53.164	3 02.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	38 .104
38	2 43.498	2 53.328	3 03.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	39 .106
39	2 43.662	2 53.492	3 03.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	40 .109
40	2 43.826	2 53.656	3 03.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	41 .112
41	2 43.990	2 53.819	3 03.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	42 .115
42	2 44.154	2 53.983	3 03.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	43 .117
43	2 44.317	2 54.147	3 03.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	44 .120
44	2 44.481	2 54.311	3 04.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	45 .123
45	2 44.645	2 54.475	3 04.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	46 .126
46	2 44.809	2 54.638	3 04.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	47 .128
47	2 44.973	2 54.802	3 04.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	48 .131
48	2 45.137	2 54.966	3 04.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	49 .134
49	2 45.300	2 55.130	3 04.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	50 .137
50	2 45.464	2 55.294	3 05.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	51 .139
51	2 45.628	2 55.458	3 05.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	52 .142
52	2 45.792	2 55.621	3 05.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	53 .145
53	2 45.956	2 55.785	3 05.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	54 .147
54	2 46.120	2 55.949	3 05.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	55 .150
55	2 46.283	2 56.113	3 05.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	56 .153
56	2 46.447	2 56.277	3 06.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	57 .156
57	2 46.611	2 56.441	3 06.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	58 .158
58	2 46.775	2 56.604	3 06.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	59 .161
59	2 46.939	2 56.768	3 06.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	

TABLE II. MEAN SOLAR INTO SIDEREAL TIME

Mean Solar.	0 ^h .	1 ^h .	2 ^h .	3 ^h .	4 ^h .	5 ^h .	6 ^h .	7 ^h .	For Seconds.
m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	s. s.
0	00.000	0 09.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 08.995	1 0.003
1	00.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 09.160	2 .005
2	00.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 09.324	3 .008
3	00.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 09.488	4 .011
4	00.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 09.652	5 .014
5	00.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 09.817	6 .016
6	00.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 00.124	1 09.981	7 .019
7	01.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 00.289	1 10.145	8 .022
8	01.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 00.453	1 10.310	9 .025
9	01.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 00.617	1 10.474	10 .027
10	01.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 00.782	1 10.638	11 .030
11	01.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 00.946	1 10.802	12 .033
12	01.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 01.110	1 10.967	13 .036
13	02.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 01.274	1 11.131	14 .038
14	02.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 01.439	1 11.295	15 .041
15	02.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 01.603	1 11.459	16 .044
16	02.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 01.767	1 11.624	17 .047
17	02.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 01.932	1 11.788	18 .049
18	02.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 02.096	1 11.952	19 .052
19	03.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 02.260	1 12.117	20 .055
20	03.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 02.424	1 12.281	21 .057
21	03.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 02.589	1 12.445	22 .060
22	03.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 02.753	1 12.609	23 .063
23	03.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 02.917	1 12.774	24 .066
24	03.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 03.081	1 12.938	25 .068
25	04.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 03.246	1 13.102	26 .071
26	04.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 03.410	1 13.266	27 .074
27	04.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 03.574	1 13.431	28 .077
28	04.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 03.739	1 13.595	29 .079
29	04.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 03.903	1 13.759	30 .082
30	04.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 04.067	1 13.924	31 .085
31	05.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 04.231	1 14.088	32 .088
32	05.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 04.396	1 14.252	33 .090
33	05.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 04.560	1 14.416	34 .093
34	05.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 04.724	1 14.581	35 .096
35	05.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 04.888	1 14.745	36 .099
36	05.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 05.053	1 14.909	37 .101
37	06.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 05.217	1 15.073	38 .104
38	06.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 05.381	1 15.238	39 .107
39	06.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 05.546	1 15.402	40 .110
40	06.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 05.710	1 15.566	41 .112
41	06.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 05.874	1 15.731	42 .115
42	06.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 06.038	1 15.895	43 .118
43	07.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 06.203	1 16.059	44 .120
44	07.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 06.367	1 16.223	45 .123
45	07.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 06.531	1 16.388	46 .126
46	07.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 06.695	1 16.552	47 .129
47	07.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 06.860	1 16.716	48 .131
48	07.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 07.024	1 16.881	49 .134
49	08.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 07.188	1 17.045	50 .137
50	08.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 07.353	1 17.209	51 .140
51	08.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 07.517	1 17.373	52 .142
52	08.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 07.681	1 17.538	53 .145
53	08.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 07.845	1 17.702	54 .148
54	08.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 08.010	1 17.866	55 .151
55	09.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 08.174	1 18.030	56 .153
56	09.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 08.338	1 18.195	57 .156
57	09.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 08.502	1 18.359	58 .159
58	09.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 08.667	1 18.523	59 .162
59	09.692	0 19.549	0 29.405	0 39.261	0 49.118	0 58.975	1 08.831	1 18.688	

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.
m.	m.	m.	m.	m.	m.	m.	m.	m.	s.
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 08.134	2 17.991	2 27.847	1 0.008
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 08.298	2 18.155	2 28.011	2 .005
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 08.463	2 18.319	2 28.176	3 .008
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 08.627	2 18.483	2 28.340	4 .011
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 08.791	2 18.648	2 28.504	5 .014
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 08.956	2 18.812	2 28.668	6 .016
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 09.120	2 18.976	2 28.833	7 .019
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 09.284	2 19.141	2 28.997	8 .022
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 09.448	2 19.305	2 29.161	9 .025
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 09.613	2 19.469	2 29.326	10 .027
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 09.777	2 19.633	2 29.490	11 .030
11	1 20.659	1 30.515	1 40.372	1 50.228	2 00.085	2 09.941	2 19.798	2 29.654	12 .033
12	1 20.823	1 30.680	1 40.536	1 50.393	2 00.249	2 10.105	2 19.962	2 29.818	13 .036
13	1 20.987	1 30.844	1 40.700	1 50.557	2 00.413	2 10.270	2 20.126	2 29.983	14 .038
14	1 21.152	1 31.008	1 40.865	1 50.721	2 00.578	2 10.434	2 20.290	2 30.147	15 .041
15	1 21.316	1 31.172	1 41.029	1 50.885	2 00.742	2 10.598	2 20.455	2 30.311	16 .044
16	1 21.480	1 31.337	1 41.193	1 51.050	2 00.906	2 10.763	2 20.619	2 30.476	17 .047
17	1 21.644	1 31.501	1 41.357	1 51.214	2 01.070	2 10.927	2 20.783	2 30.640	18 .049
18	1 21.809	1 31.665	1 41.522	1 51.378	2 01.235	2 11.091	2 20.948	2 30.804	19 .052
19	1 21.973	1 31.829	1 41.686	1 51.542	2 01.399	2 11.255	2 21.112	2 30.968	20 .055
20	1 22.137	1 31.994	1 41.850	1 51.707	2 01.563	2 11.420	2 21.276	2 31.133	21 .057
21	1 22.302	1 32.158	1 42.015	1 51.871	2 01.727	2 11.584	2 21.440	2 31.297	22 .060
22	1 22.466	1 32.322	1 42.179	1 52.035	2 01.892	2 11.748	2 21.605	2 31.461	23 .063
23	1 22.630	1 32.487	1 42.343	1 52.200	2 02.056	2 11.912	2 21.769	2 31.625	24 .066
24	1 22.794	1 32.651	1 42.507	1 52.364	2 02.220	2 12.077	2 21.933	2 31.790	25 .068
25	1 22.959	1 32.815	1 42.672	1 52.528	2 02.385	2 12.241	2 22.098	2 31.954	26 .071
26	1 23.123	1 32.979	1 42.836	1 52.692	2 02.549	2 12.405	2 22.262	2 32.118	27 .074
27	1 23.287	1 33.144	1 43.000	1 52.857	2 02.713	2 12.570	2 22.426	2 32.283	28 .077
28	1 23.451	1 33.308	1 43.164	1 53.021	2 02.877	2 12.734	2 22.590	2 32.447	29 .079
29	1 23.616	1 33.472	1 43.329	1 53.185	2 03.042	2 12.898	2 22.755	2 32.611	30 .082
30	1 23.780	1 33.637	1 43.493	1 53.349	2 03.206	2 13.062	2 22.919	2 32.775	31 .085
31	1 23.944	1 33.801	1 43.657	1 53.514	2 03.370	2 13.227	2 23.083	2 32.940	32 .088
32	1 24.109	1 33.965	1 43.822	1 53.678	2 03.534	2 13.391	2 23.247	2 33.104	33 .090
33	1 24.273	1 34.129	1 43.986	1 53.842	2 03.699	2 13.555	2 23.412	2 33.268	34 .093
34	1 24.437	1 34.294	1 44.150	1 54.007	2 03.863	2 13.720	2 23.576	2 33.432	35 .096
35	1 24.601	1 34.458	1 44.314	1 54.171	2 04.027	2 13.884	2 23.740	2 33.597	36 .099
36	1 24.766	1 34.622	1 44.479	1 54.335	2 04.192	2 14.048	2 23.905	2 33.761	37 .101
37	1 24.930	1 34.786	1 44.643	1 54.499	2 04.356	2 14.212	2 24.069	2 33.925	38 .104
38	1 25.094	1 34.951	1 44.807	1 54.664	2 04.520	2 14.377	2 24.233	2 34.090	39 .107
39	1 25.259	1 35.115	1 44.971	1 54.828	2 04.684	2 14.541	2 24.397	2 34.254	40 .110
40	1 25.423	1 35.279	1 45.136	1 54.992	2 04.849	2 14.705	2 24.562	2 34.418	41 .112
41	1 25.587	1 35.444	1 45.300	1 55.156	2 05.013	2 14.869	2 24.726	2 34.582	42 .115
42	1 25.751	1 35.608	1 45.464	1 55.321	2 05.177	2 15.034	2 24.890	2 34.747	43 .118
43	1 25.916	1 35.772	1 45.629	1 55.485	2 05.342	2 15.198	2 25.054	2 34.911	44 .120
44	1 26.080	1 35.936	1 45.793	1 55.649	2 05.506	2 15.362	2 25.219	2 35.075	45 .123
45	1 26.244	1 36.101	1 45.957	1 55.814	2 05.670	2 15.527	2 25.383	2 35.239	46 .126
46	1 26.408	1 36.265	1 46.121	1 55.978	2 05.834	2 15.691	2 25.547	2 35.404	47 .129
47	1 26.573	1 36.429	1 46.286	1 56.142	2 05.999	2 15.855	2 25.712	2 35.568	48 .131
48	1 26.737	1 36.593	1 46.450	1 56.306	2 06.163	2 16.019	2 25.876	2 35.732	49 .134
49	1 26.901	1 36.758	1 46.614	1 56.471	2 06.327	2 16.184	2 26.040	2 35.897	50 .137
50	1 27.066	1 36.922	1 46.778	1 56.635	2 06.491	2 16.348	2 26.204	2 36.061	51 .140
51	1 27.230	1 37.086	1 46.943	1 56.799	2 06.656	2 16.512	2 26.369	2 36.225	52 .142
52	1 27.394	1 37.251	1 47.107	1 56.964	2 06.820	2 16.676	2 26.533	2 36.389	53 .145
53	1 27.558	1 37.415	1 47.271	1 57.128	2 06.984	2 16.841	2 26.697	2 36.554	54 .148
54	1 27.723	1 37.579	1 47.436	1 57.293	2 07.149	2 17.005	2 26.861	2 36.718	55 .151
55	1 27.887	1 37.743	1 47.600	1 57.456	2 07.313	2 17.169	2 27.026	2 36.882	56 .153
56	1 28.051	1 37.908	1 47.764	1 57.621	2 07.477	2 17.334	2 27.190	2 37.047	57 .156
57	1 28.215	1 38.072	1 47.928	1 57.785	2 07.641	2 17.498	2 27.354	2 37.211	58 .159
58	1 28.380	1 38.236	1 48.093	1 57.949	2 07.806	2 17.662	2 27.519	2 37.375	59 .162
59	1 28.544	1 38.400	1 48.257	1 58.113	2 07.970	2 17.826	2 27.683	2 37.539	

TABLE II. MEAN SOLAR INTO SIDEREAL TIME.

Mean Solar.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.	For Seconds.
0	2 37.704	2 47.560	2 57.417	3 07.273	3 17.129	3 26.986	3 36.842	3 46.699	1 0.003
1	2 37.868	2 47.724	2 57.581	3 07.437	3 17.294	3 27.150	3 37.007	3 46.863	2 .006
2	2 38.032	2 47.889	2 57.745	3 07.602	3 17.458	3 27.315	3 37.171	3 47.027	3 .008
3	2 38.196	2 48.053	2 57.909	3 07.766	3 17.622	3 27.479	3 37.335	3 47.192	4 .011
4	2 38.361	2 48.217	2 58.074	3 07.930	3 17.787	3 27.643	3 37.500	3 47.356	5 .014
5	2 38.525	2 48.381	2 58.238	3 08.094	3 17.951	3 27.807	3 37.664	3 47.520	6 .016
6	2 38.689	2 48.546	2 58.402	3 08.259	3 18.115	3 27.972	3 37.828	3 47.685	7 .019
7	2 38.854	2 48.710	2 58.566	3 08.423	3 18.279	3 28.136	3 37.992	3 47.849	8 .022
8	2 39.018	2 48.874	2 58.731	3 08.587	3 18.444	3 28.300	3 38.157	3 48.013	9 .025
9	2 39.182	2 49.039	2 58.895	3 08.751	3 18.608	3 28.464	3 38.321	3 48.177	10 .027
10	2 39.346	2 49.203	2 59.059	3 08.916	3 18.772	3 28.629	3 38.485	3 48.342	11 .030
11	2 39.511	2 49.367	2 59.224	3 09.080	3 18.937	3 28.793	3 38.649	3 48.506	12 .033
12	2 39.675	2 49.531	2 59.388	3 09.244	3 19.101	3 28.957	3 38.814	3 48.670	13 .036
13	2 39.839	2 49.696	2 59.552	3 09.409	3 19.265	3 29.122	3 38.978	3 48.834	14 .038
14	2 39.003	2 49.860	2 59.716	3 09.573	3 19.429	3 29.286	3 39.142	3 48.999	15 .041
15	2 40.168	2 50.024	2 59.881	3 09.737	3 19.594	3 29.450	3 39.307	3 49.163	16 .044
16	2 40.332	2 50.188	3 00.045	3 09.901	3 19.758	3 29.614	3 39.471	3 49.327	17 .047
17	2 40.496	2 50.353	3 00.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	18 .049
18	2 40.661	2 50.517	3 00.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	19 .052
19	2 40.825	2 50.681	3 00.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	20 .055
20	2 40.989	2 50.846	3 00.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	21 .057
21	2 41.153	2 51.010	3 00.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	22 .060
22	2 41.318	2 51.174	3 01.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	23 .063
23	2 41.482	2 51.338	3 01.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	24 .066
24	2 41.646	2 51.503	3 01.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	25 .068
25	2 41.810	2 51.667	3 01.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	26 .071
26	2 41.975	2 51.831	3 01.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	27 .074
27	2 42.139	2 51.995	3 01.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	28 .077
28	2 42.303	2 52.160	3 02.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	29 .079
29	2 42.468	2 52.324	3 02.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	30 .082
30	2 42.632	2 52.488	3 02.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	31 .085
31	2 42.796	2 52.653	3 02.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	32 .088
32	2 42.960	2 52.817	3 02.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	33 .090
33	2 43.125	2 52.981	3 02.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	34 .093
34	2 43.289	2 53.145	3 03.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	35 .096
35	2 43.453	2 53.310	3 03.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	36 .099
36	2 43.617	2 53.474	3 03.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	37 .101
37	2 43.782	2 53.638	3 03.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	38 .104
38	2 43.946	2 53.803	3 03.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	39 .107
39	2 44.110	2 53.967	3 03.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	40 .110
40	2 44.275	2 54.131	3 03.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	41 .112
41	2 44.439	2 54.295	3 04.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	42 .115
42	2 44.603	2 54.460	3 04.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	43 .118
43	2 44.767	2 54.624	3 04.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	44 .120
44	2 44.932	2 54.788	3 04.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	45 .123
45	2 45.096	2 54.952	3 04.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	46 .126
46	2 45.260	2 55.117	3 04.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	47 .129
47	2 45.425	2 55.281	3 05.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	48 .131
48	2 45.589	2 55.445	3 05.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	49 .134
49	2 45.753	2 55.610	3 05.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	50 .137
50	2 45.917	2 55.774	3 05.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	51 .140
51	2 46.082	2 55.938	3 05.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	52 .142
52	2 46.246	2 56.102	3 05.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	53 .145
53	2 46.410	2 56.267	3 06.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	54 .148
54	2 46.574	2 56.431	3 06.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	55 .151
55	2 46.739	2 56.595	3 06.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	56 .153
56	2 46.903	2 56.759	3 06.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	57 .156
57	2 47.067	2 56.924	3 06.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	58 .159
58	2 47.232	2 57.088	3 06.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	59 .162
59	2 47.396	2 57.252	3 07.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	

TABLE III.

TABLE GIVING, FOR SEVEN POLAR STARS, THE CORRECTIONS OF THE APPARENT PLACE WHICH DEPEND ON THE ARGUMENT 2ζ IN NUTATION.

ζ or $\zeta - 180^\circ$	α Urs. Min.		51 Cephei.		32 Camelop.		ϵ Urs. Min.		δ Urs. Min.		λ Urs. Min.		σ Octantis.		ζ or $\zeta - 180^\circ$
	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	R. A.	Dec.	
0°	-.233	+.03	+.021	+.09	+.056	-.02	+.011	-.09	-.006	-.09	-.150	-.08	+.013	-.09	90°
2	.238	.02	.012	.09	.056	.01	.013	.08	-.001	.09	.133	.08	-.018	.09	92
4	.242	.02	+.003	.09	.055	-.01	.015	.08	+.005	.09	.115	.08	.049	.09	94
6	.245	+.01	-.005	.09	.055	.00	.016	.08	.010	.09	.097	.08	.080	.09	96
8	.246	.00	.014	.09	.054	.00	.018	.08	.016	.09	.078	.09	.110	.09	98
10	-.246	.00	-.023	+.09	+.052	+.01	+.019	-.07	+.021	-.08	-.059	-.09	-.139	-.08	100
12	.246	-.01	.031	.09	.051	.01	.021	.07	.026	.08	.040	.09	.168	.08	102
14	.244	.01	.039	.08	.049	.02	.022	.07	.031	.08	-.020	.09	.196	.08	104
16	.241	.02	.048	.08	.047	.03	.023	.06	.036	.08	.000	.09	.224	.08	106
18	.237	.02	.056	.08	.045	.03	.024	.06	.041	.07	+.019	.09	.250	.07	108
20	-.230	-.03	-.063	+.08	+.042	+.04	+.025	-.06	+.046	-.07	+.039	-.08	-.275	-.07	110
22	.224	.03	.071	.07	.039	.04	.026	.05	.050	.07	.058	.08	.298	.07	112
24	.216	.04	.078	.07	.036	.05	.027	.04	.054	.06	.078	.08	.320	.06	114
26	.207	.04	.084	.07	.033	.05	.027	.04	.058	.06	.097	.08	.341	.06	116
28	.197	.05	.091	.06	.030	.06	.028	.03	.062	.05	.115	.08	.369	.05	118
30	-.187	-.05	-.096	+.06	+.027	+.06	+.028	-.02	+.065	-.05	+.133	-.07	-.377	-.05	120
32	.175	.06	.102	.05	.023	.06	.028	.02	.068	.04	.150	.07	.398	.04	122
34	.162	.06	.107	.05	.020	.07	.028	.01	.071	.04	.166	.07	.426	.03	124
36	.149	.07	.111	.04	.016	.07	.028	-.01	.073	.03	.182	.06	.447	.03	126
38	.135	.07	.115	.03	.012	.07	.028	.00	.075	.03	.196	.06	.426	.02	128
40	-.120	-.07	-.118	+.03	+.008	+.07	+.028	+.01	+.077	-.02	+.210	-.05	-.434	-.02	130
42	.105	.07	.123	.02	+.004	.08	.027	.01	.078	.01	.223	.05	.439	.01	132
44	.089	.08	.122	.02	-.000	.08	.026	.02	.079	-.01	.235	.04	.442	-.01	134
46	.073	.08	.124	+.01	-.004	.08	.026	.02	.079	.00	.245	.04	.443	.00	136
48	.056	.08	.125	.00	.007	.08	.025	.03	.079	.00	.254	.03	.442	+.01	138
50	-.039	-.08	-.125	.00	-.011	+.08	+.024	+.04	+.079	+.01	+.262	-.02	-.438	+.01	140
52	.022	.08	.125	-.01	.015	.08	.023	.04	.078	.02	.269	.02	.433	.02	142
54	-.005	.08	.124	.01	.019	.08	.021	.05	.077	.02	.275	.01	.426	.02	144
56	+.012	.08	.122	.02	.022	.08	.020	.05	.075	.03	.279	-.01	.415	.03	146
58	.029	.08	.120	.03	.026	.08	.018	.06	.073	.03	.282	.00	.404	.04	148
60	+.046	-.08	-.117	-.03	-.029	+.08	+.017	+.06	+.071	+.04	+.283	+.01	-.390	+.04	150
62	.063	.08	.114	.04	.033	.08	.015	.07	.069	.04	.283	.01	.374	.05	152
64	.079	.08	.110	.04	.036	.07	.014	.07	.066	.05	.281	.02	.357	.05	154
66	.095	.08	.106	.05	.039	.07	.012	.07	.063	.05	.279	.02	.338	.06	156
68	.111	.07	.101	.05	.041	.07	.010	.08	.059	.06	.275	.03	.317	.06	158
70	+.126	-.07	-.095	-.06	-.044	+.06	+.008	+.08	+.055	+.06	+.267	+.03	-.294	+.07	160
72	.141	.07	.089	.06	.046	.06	.006	.08	.051	.07	.263	.04	.271	.07	162
74	.154	.06	.083	.07	.048	.06	.004	.08	.047	.07	.255	.04	.245	.07	164
76	.167	.06	.076	.07	.050	.05	+.002	.08	.043	.08	.245	.05	.219	.08	166
78	.180	.06	.069	.07	.052	.05	.000	.09	.038	.08	.235	.05	.192	.08	168
80	+.191	-.05	-.062	-.08	-.053	+.04	-.002	+.09	+.033	+.08	+.223	+.06	-.163	+.08	170
82	.201	.05	.054	.08	.054	.04	.004	.09	.028	.08	.210	.06	.134	.08	172
84	.211	.04	.046	.08	.055	.03	.006	.09	.023	.09	.197	.07	.105	.09	174
86	.219	.04	.038	.08	.056	.03	.008	.09	.017	.09	.182	.07	.074	.09	176
88	.226	.03	.029	.09	.056	.02	.010	.09	.012	.09	.166	.08	.044	.09	178
90	+.233	-.03	-.021	-.09	-.056	+.02	-.011	+.09	+.006	+.09	+.150	+.08	-.013	+.09	180

NOTE. — When the Argument is on the right-hand side of the Table, the sign of the correction is to be reversed.
The Moon's Mean Longitude, ζ , may be found on page 340.

TABLE IV.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS A AND B WHICH DEPEND ON THE ARGUMENT $2C$, IN UNITS OF THE FIFTH DECIMAL FOR A , AND OF THE FOURTH FOR B .

C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B	C or $C - 180^\circ$	A	B
0°	— 0	—886	45°	—405	+ 0	90°	+ 0	+886	135°	+405	— 0
1	14	885	46	405	31	91	14	885	136	405	31
2	29	883	47	404	61	92	29	883	137	404	61
3	42	881	48	403	93	93	42	881	138	403	93
4	56	877	49	401	124	94	56	877	139	401	124
5	— 70	—872	50	—399	+153	95	+ 70	+872	140	+399	—153
6	84	866	51	396	184	96	84	866	141	396	184
7	98	859	52	393	215	97	98	859	142	393	215
8	112	851	53	389	244	98	112	851	143	389	244
9	125	843	54	385	274	99	125	843	144	385	274
10	—138	—833	55	—380	+303	100	+138	+833	145	+380	—303
11	152	821	56	375	331	101	152	821	146	375	331
12	165	809	57	370	360	102	165	809	147	370	360
13	178	796	58	364	388	103	178	796	148	364	388
14	190	782	59	358	415	104	190	782	149	358	415
15	—202	—767	60	—351	+443	105	+202	+767	150	+351	—443
16	214	751	61	344	470	106	214	751	151	344	470
17	226	734	62	336	495	107	226	734	152	336	495
18	238	716	63	328	520	108	238	716	153	328	520
19	249	698	64	319	545	109	249	698	154	319	545
20	—261	—678	65	—310	+570	110	+261	+678	155	+310	—570
21	271	659	66	301	592	111	271	659	156	301	592
22	282	637	67	291	615	112	282	637	157	291	615
23	291	615	68	282	637	113	291	615	158	282	637
24	301	592	69	271	659	114	301	592	159	271	659
25	—310	—570	70	—261	+678	115	+310	+570	160	+261	—678
26	319	545	71	249	698	116	319	545	161	249	698
27	328	520	72	238	716	117	328	520	162	238	716
28	336	495	73	226	734	118	336	495	163	226	734
29	344	470	74	214	751	119	344	470	164	214	751
30	—351	—443	75	—202	+767	120	+351	+443	165	+202	—767
31	358	415	76	190	782	121	358	415	166	190	782
32	364	388	77	178	796	122	364	388	167	178	796
33	370	360	78	165	809	123	370	360	168	165	809
34	375	331	79	152	821	124	375	331	169	152	821
35	—380	—303	80	—138	+833	125	+380	+303	170	+138	—833
36	385	274	81	125	843	126	385	274	171	125	843
37	389	244	82	112	851	127	389	244	172	112	851
38	393	215	83	98	859	128	393	215	173	98	859
39	396	184	84	84	866	129	396	184	174	84	866
40	—399	—153	85	— 70	+872	130	+399	+153	175	+ 70	—872
41	401	124	86	56	877	131	401	124	176	56	877
42	403	93	87	42	881	132	403	93	177	42	881
43	404	61	88	29	883	133	404	61	178	29	883
44	405	31	89	14	885	134	405	31	179	14	885
45	—405	— 0	90	— 0	+886	135	+405	+ 0	180	+ 0	—886

NOTE. — The Moon's Mean Longitude C , may be found on page 346.

TABLE V.

TABLE GIVING THE CORRECTIONS OF THE CONSTANTS A AND B DEPENDING ON THE SMALL TERMS OF THE NUTATION, IN UNITS OF THE FIFTH DECIMAL FOR A , AND OF THE FOURTH FOR B .

Arg.	$\zeta - \Gamma'$	$2\odot - 2\Gamma'$	$2\odot - 2\Omega$	$2\odot - \Omega$		$2\Gamma' - \Omega$		Γ'		$3\odot - \Gamma$	
	A	A	A	A	B	A	B	A	B	A	B
0	+ 0	+ 0	-0	+ 0	+67	+0	+24	+5	+ 8	-11	- 5
10	23	2	1	4	66	2	24	6	+ 4	10	+ 9
20	46	3	2	9	63	3	23	7	- 2	7	21
30	68	5	2	12	58	4	21	8	8	- 2	27
40	87	6	3	16	51	6	18	8	13	+ 4	25
50	+103	+ 8	-4	+19	+43	+7	+15	+7	-19	+ 8	+17
60	117	9	4	22	34	8	12	6	24	11	+ 5
70	127	9	4	24	23	8	8	4	28	10	- 9
80	133	10	5	25	+12	9	+ 4	+2	30	7	21
90	135	10	5	25	0	9	0	0	31	+ 2	27
100	+133	+10	-5	+25	-12	+9	- 4	-2	-30	- 4	-25
110	127	9	5	24	23	8	8	4	28	8	17
120	117	9	4	22	34	8	12	6	24	11	- 5
130	103	8	4	19	43	7	15	7	19	10	+ 9
140	87	6	3	16	51	6	18	8	13	7	21
150	+ 68	+ 5	-2	+12	-58	+4	-21	-8	- 8	- 2	+27
160	46	3	2	9	63	3	23	7	- 2	+ 4	25
170	+ 23	+ 2	-1	+ 4	66	+2	24	6	+ 4	8	17
180	0	0	0	0	67	0	24	5	8	11	+ 5
190	- 23	- 2	+1	- 4	66	-2	24	4	12	10	- 9
200	- 46	- 3	+2	- 9	-63	-3	-23	-2	+14	+ 7	-21
210	68	5	2	12	58	4	21	-1	16	+ 2	27
220	87	6	3	16	51	6	18	0	16	- 4	25
230	103	8	4	19	43	7	15	+1	16	8	17
240	-117	9	4	22	34	8	12	1	16	11	- 5
250	-127	- 9	+5	-24	-23	-8	- 8	+1	+16	-10	+ 9
260	133	10	5	25	-12	9	- 4	0	15	7	21
270	135	10	5	25	0	9	0	0	15	- 2	27
280	133	10	5	25	+12	9	+ 4	0	15	+ 4	25
290	127	9	5	24	23	8	8	-1	16	8	17
300	-117	- 9	+4	-22	+34	-8	+12	-1	+16	+11	+ 5
310	103	8	4	19	43	7	15	-1	16	10	- 9
320	87	6	3	16	51	6	18	0	16	7	21
330	68	5	2	12	58	4	21	+1	16	+ 2	27
340	46	3	2	9	63	3	23	2	14	- 4	25
350	- 23	- 2	+1	- 4	+66	-2	+24	+4	+12	- 8	-17
360	- 0	- 0	+0	- 0	+67	-0	+24	+5	+ 8	-11	- 5
Year.	$\zeta - \Gamma'$	$2\odot - 2\Gamma'$	$2\odot - 2\Omega$	$2\odot - \Omega$		$2\Gamma' - \Omega$		Γ'		$3\odot - \Gamma$	
1865	335.6	221.2	120.7	345.6		124.5		350.3		202.0	
1866	64.4	139.3	167.8	4.5		225.2		31.0		201.3	
1867	153.1	57.5	206.0	23.4		325.9		71.7		200.6	
1868	254.9	337.4	246.3	44.3		66.8		112.4		202.9	
1869	343.6	255.6	284.5	62.2		167.5		153.1		202.2	
1870	72.3	173.8	322.7	81.1		268.2		193.7		201.5	
1871	161.0	91.9	0.9	100.0		8.9		234.4		200.9	
1872	262.8	11.8	41.2	121.0		109.8		275.2		203.1	
1873	351.5	290.0	79.4	139.9		210.5		315.8		202.5	
1874	80.3	208.2	117.7	158.8		311.2		356.5		201.8	
Daily Motion.	13.065	1.749	2.007	2.024		0.276		0.111		2.957	

NOTE. — The arguments given above are for Jan. 0.5 in common years, but for Jan. 1.5 in leap years.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERISION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
Jan. 2	α Cancri 4	30	20 20	20 25	20 19	20 13	21 25	21 26	21 24	21 21	115	123	131	135
		35	20 23	20 19	20 13	20 3	21 15	21 16	21 15	21 12	98	105	113	107
		40	20 20	20 15	20 7	19 56	21 4	21 5	21 5	21 3	80	86	95	93
		45	20 18	20 10	20 1	19 52	20 52	20 53	20 53	20 52	63	71	76	85
5	76 Leonis 6	30	13 39	13 32	13 28	13 27	14 53	14 43	14 35	14 29	359	2	5	4
		35	13 48	13 40	13 33	13 31	14 46	14 39	14 33	14 28	344	347	350	350
		40	14 1	13 49	13 44	13 41	14 35	14 31	14 27	14 23	326	329	331	332
		45	14 22	.....	.....	14 17	Star 2' 33" N.	Star 42" N.	.....	.....	.....	.....	.....	.....
12	29 Ophiuchi 6	30	18 45	18 38	*18 33	.....	19 48	19 42	19 37	19 34	1	6	10	16
		35	18 6	18 46	*18 40	.....	19 42	19 40	19 37	19 35	345	353	359	5
		40	19 30	19 0	*18 50	*18 47	19 30	19 33	19 35	19 35	322	335	346	352
		45	.....	.....	*19 10	*18 59	.....	.....	19 25	*19 32	.....	.....	320	338
25	β Tauri 6	30	8 54	8 36	8 24	8 13	10 27	10 3	9 44	9 27	146	100	55	30
		35	9 0	8 45	8 34	8 26	10 18	10 3	9 42	9 26	111	84	47	20
		40	9 9	8 57	8 49	8 45	10 13	9 57	9 38	9 17	83	69	28	359
		45	9 26	9 20	9 18	.....	9 59	9 41	9 20	.....	48	20	.....	.....
25	8249 Lal. 7½	30	.....	.....	.....	8 37	.....	.....	.....	8 49	.....	.....	.....	128
		35	.....	9 14	8 44	8 24	.....	9 32	9 27	9 16	.....	162	129	115
		40	9 12	8 54	8 37	8 23	10 8	9 55	9 42	9 31	154	142	116	97
		45	9 8	8 53	8 39	8 23	10 18	10 6	9 53	9 41	146	128	109	89
25	1212 Rumi. 6	30	12 11	11 57	11 41	11 23	13 25	13 16	13 4	12 49	159	164	167	163
		35	12 8	11 55	11 40	11 24	13 19	13 11	13 0	12 47	134	138	138	135
		40	12 9	11 56	11 42	11 28	13 10	13 3	12 53	12 40	114	115	114	107
		45	12 15	12 2	11 50	11 38	12 54	12 48	12 40	12 29	82	86	84	78
26	120 Tauri 6	30	14 55	14 41	14 27	14 12	15 20	15 24	15 22	15 17	81	99	109	118
		35	.....	14 55	14 37	14 19	Star 1' 15" N.	15 5	15 2	.....	.....	51	83	93
		40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	26 Geminor. 5½	30	16 8	16 6	16 7	*16 9	17 7	17 4	17 2	17 2	46	39	33	28
		35	16 12	16 11	16 12	16 14	17 14	17 10	17 7	17 6	36	30	24	18
		40	16 19	16 19	16 20	16 23	17 19	17 14	17 11	17 8	27	20	13	7
		45	16 25	16 25	16 29	16 33	17 23	17 17	17 12	17 9	16	9	3	357
28	α Geminor. 3½	30	.....	.....	7 32	7 16	.....	.....	7 32	7 40	.....	.....	110	93
		35	7 31	7 20	7 14	7 11	7 47	7 51	7 54	7 54	106	89	79	73
		40	7 22	7 17	7 14	7 13	8 9	8 6	8 5	8 4	80	73	66	61
		45	7 23	7 19	7 17	7 16	8 22	8 17	8 14	8 13	67	61	56	51
29	B.A.C. 2372 6½	30	18 44	18 42	18 41	18 41	19 39	19 40	19 39	19 36	136	144	150	159
		35	18 37	18 35	18 31	18 3	19 32	19 34	19 33	19 31	121	128	134	141
		40	18 30	18 26	18 2	18 17	19 25	19 26	19 25	19 23	106	112	118	125
		45	18 24	18 21	18 16	18 9	19 16	19 17	19 17	19 14	93	98	104	110
30	B.A.C. 3122 6½	30	7 55	7 55	*7 57	.....	8 56	8 53	8 52	*8 51	16	13	9	5
		35	8 0	8 0	*8 3	.....	8 58	8 55	8 52	8 51	4	1	357	353
		40	8 8	8 14	8 12	.....	8 58	8 54	8 51	8 48	352	348	344	336
		45	8 22	8 24	8 33	.....	8 53	8 47	8 38	.....	335	326	309	.....
Feb. 11	ε¹ Sagittarii 4	30	18 57	18 57	19 4	.....	19 40	19 26	19 4	.....	98	102	130	.....
		35	18 55	18 53	*18 54	.....	19 54	19 42	19 34	19 25	85	87	91	100
		40	18 57	18 54	*18 53	.....	20 3	19 53	19 46	*19 40	78	78	81	85
		45	19 3	18 58	*18 57	.....	20 12	20 2	19 56	*19 50	73	73	74	77
18	88 Piscium 6½	30	8 12	7 59	7 45	7 29	9 9	9 3	8 49	8 46	201	197	185	180
		35	8 5	7 56	7 44	7 29	9 10	9 5	8 57	8 48	174	170	166	159
		40	8 3	7 54	7 44	7 33	9 8	9 2	8 55	8 46	154	149	144	136
		45	8 3	7 56	7 48	7 39	9 2	8 57	8 50	8 40	127	127	121	111

* Below the horizon.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h 1 30	m 30	h 30	m 3	h 1 30	m 30	h 30	m 3	h 1 30	m 30	h 30	m 3
Feb. 21	B.A.C. 1281 7	30	10 8	9 56	9 40	9 20	10 58	10 44	10 28	10 12	2 6	211	214	201
		35	9 56	9 43	9 27	9 9	11 2	10 51	10 36	10 23	178	181	179	171
		40	9 48	9 36	9 22	9 6	11 0	10 51	10 40	10 27	154	156	154	147
		45	9 44	9 33	9 21	9 7	10 55	10 47	10 37	10 26	132	131	129	122
24	α Geminor. 3½	30	16 31	16 30	16 28	16 25	*17 11	17 22	17 24	17 24	97	117	124	132
		35	16 29	16 27	16 24	16 19	*17 2	17 13	17 16	17 17	79	99	108	117
		40	16 28	16 24	16 20	16 14	*16 50	17 2	17 5	17 7	57	80	89	98
		45	16 35	16 25	16 18	16 11	16 37	16 47	16 53	16 55	33	56	71	79
26	α Cancri 4	30	12 34	.....	.....	.....	13 1	.....	.....	.....	180	.....	.....	.....
		35	12 10	12 2	11 58	.....	13 11	12 47	12 8	.....	148	140	133	.....
		40	11 56	11 44	11 33	11 23	13 11	12 54	12 34	12 14	124	118	107	98
		45	11 48	11 36	11 24	11 14	13 8	12 54	12 39	12 33	103	99	91	84
28	35 Sext. pr. 6½	30	14 44	14 15	13 50	13 31	15 18	15 17	15 9	14 56	36	49	49	40
		35	.....	14 26	13 55	13 34	.....	14 52	14 53	14 44	.....	9	21	19
		40	.....	.....	14 20	13 44	.....	.....	14 20	14 29	.....	.....	330	356
		45	.....	.....	.....	14 3	.....	.....	Star 2 n.	.....	.....	.....	.....	.....
Mar. 1	79 Leonis 6	30	9 6	9 4	9 3	*9 4	10 14	10 7	10 2	10 0	25	27	28	20
		35	9 8	9 5	9 4	*9 5	10 16	10 10	10 6	10 4	13	15	16	17
		40	9 12	9 10	9 9	9 10	10 16	10 12	10 7	10 5	3	1	3	3
		45	9 22	9 18	9 17	9 17	10 13	10 10	10 6	10 4	349	351	349	350
22	B.A.C. 1930 6½	30	14 16	14 18	14 21	14 23	.....	*15 5	15 6	15 4	.....	164	174	187
		35	14 9	14 11	14 12	14 19	.....	*15 2	15 3	15 3	.....	147	157	166
		40	14 3	14 4	14 4	14 3	*14 54	14 57	14 59	14 59	123	132	141	146
		45	13 58	13 58	13 57	13 55	14 47	14 50	14 52	14 53	108	115	121	131
25	A' Cancri 6	30	11 22	11 16	10 20	.....	12 19	11 56	10 20	.....	175	182	177	.....
		35	11 5	10 54	10 45	10 37	12 20	12 2	11 41	11 12	148	153	146	134
		40	10 55	10 43	10 30	10 18	12 14	12 1	11 45	11 26	125	128	122	113
		45	10 48	10 36	10 23	10 10	12 8	11 56	11 44	11 28	107	106	102	95
28	B.A.C. 3836 6	30	12 5	11 45	11 26	11 13	13 27	13 16	13 0	12 43	75	70	53	37
		35	12 5	11 45	11 26	11 12	13 12	13 4	12 52	12 38	46	45	33	27
		40	12 15	11 50	11 32	11 15	12 52	12 50	12 42	12 31	13	19	17	13
		45	12 24	12 6	11 44	11 20	12 24	12 21	12 25	12 20	331	335	352	355
Apr. 17	Lal. 8610 8	30	10 58	11 1	11 4	11 6	.....	*11 44	11 44	11 41	.....	172	188	199
		35	10 52	10 54	10 55	10 56	.....	*11 43	11 44	11 43	.....	160	167	175
		40	10 47	10 48	10 48	10 47	*11 37	11 39	11 41	11 41	136	143	150	159
		45	10 43	10 43	10 42	10 39	*11 30	11 34	11 35	11 35	117	125	130	138
17	Lal. 8613 8	30	10 58	10 59	10 59	10 58	.....	*11 49	11 51	11 53	.....	139	146	156
		35	10 57	10 57	10 55	10 53	.....	*11 43	11 46	11 47	.....	118	126	134
		40	10 57	10 56	10 53	10 49	*11 29	11 34	11 38	11 40	87	95	108	116
		45	11 1	11 57	10 53	10 49	11 14	11 24	11 27	11 30	57	77	85	93
20	68 Geminor. 5½	30	10 53	10 50	10 48	10 59	11 48	11 40	11 26	10 59	171	181	197	224
		35	10 42	10 37	10 31	10 25	11 44	11 38	11 29	11 18	151	161	171	178
		40	10 33	10 26	10 19	10 10	11 38	11 33	11 25	11 15	134	141	145	155
		45	10 25	10 17	10 9	9 59	11 30	11 26	11 20	11 9	120	124	130	135
21	B.A.C. 2872 6½	30	13 26	13 24	13 20	13 14	14 18	14 19	14 20	14 20	108	116	123	132
		35	13 22	13 19	13 14	13 7	14 8	14 10	14 12	14 11	91	98	108	115
		40	13 20	13 15	13 8	13 1	13 56	13 59	14 1	14 0	72	82	90	97
		45	13 20	13 12	13 5	12 56	13 41	13 45	13 48	13 48	50	61	72	79
May 26	α Libræ 6	30	17 8	17 4	16 57	16 48	.....	*18 10	18 7	18 4	.....	139	134	142
		35	17 1	16 58	16 51	16 42	.....	*18 3	18 0	17 55	.....	194	117	111
		40	16 55	16 52	16 46	16 38	*17 54	17 49	17 44	107	99	93
		45	16 50	16 47	16 43	16 34	*17 42	17 37	17 31	87	81	76

* Below the horizon.

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OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude. °	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m	h	h m	h	h m	h	h m	h	h m	h	h m	h
			1 30	2	2 30	3	1 30	2	2 30	3	1 30	2	2 30	3
			h m	h m	h m	h m	h m	h m	h m	h m	Star °	Star °	Star °	Star °
May 28	α Ophiuchi 6	30	17 24	17 8	17 0	16 40	17 24	17 8	17 0	16 40	Star	Star	190	30's.
		35	16 57	16 40	16 26	16 12	17 34	17 26	17 14	16 57	185	171	165	157
		40	16 40	16 28	16 15	16 1	17 37	17 28	17 17	17 4	163	154	147	140
		45												
June 4	ε Aquarii 5½	30	.....	.....	.....	.....	13 56	13 52	*13 51	.....	46	47	48	.....
		35	.....	.....	.....	.....	14 1	13 59	*13 57	.....	49	49	50	.....
		40	.....	.....	.....	.....	14 6	14 4	*14 3	.....	33	34	36	.....
		45	.....	.....	.....	.....	14 10	*14 9	.....	.....	26	28	.....	.....
5	B.A.C. 8094 6	30	14 54	14 51	14 49	*14 49	15 57	15 51	15 46	15 43	76	71	67	65
		35	15 0	14 56	14 54	*14 54	16 6	15 59	15 54	15 51	70	65	60	58
		40	15 8	15 4	15 2	*15 1	16 15	16 8	16 3	15 59	65	60	56	54
		45	15 16	15 13	15 11	*15 10	16 22	16 15	16 10	16 7	62	56	52	50
7	73 Piscium 6½	30	16 20	16 19	16 19	*16 20	17 21	17 16	17 12	17 10	44	36	31	27
		35	16 29	16 28	16 28	*16 29	17 27	17 21	17 17	17 14	38	30	24	19
		40	16 39	16 38	16 38	*16 40	17 32	17 26	17 21	17 18	32	24	18	13
		45	16 51	16 50	16 51	16 52	17 37	17 30	17 24	17 20	27	18	10	3
18	76 Leonis 6	30	11 6	11 1	10 57	10 52	12 3	11 59	11 51	11 39	159	160	164	170
		35	10 55	10 49	10 42	10 38	11 58	11 53	11 47	11 37	140	144	145	152
		40	10 44	10 38	10 31	10 22	11 51	11 47	11 41	11 32	125	128	130	132
		45	10 35	10 29	10 21	10 11	11 42	11 39	11 33	11 25	112	114	116	117
18	79 Leonis 6	30	.....	*13 40	13 40	13 38	.....	.....	.....	.....	.....	.....	.....	.....
		35	*13 34	13 35	13 34	13 32	.....	.....	*14 24	14 26	.....	.....	95	98
		40	*13 31	13 31	13 30	13 27	.....	.....	*14 14	14 14	.....	.....	79	80
		45	*13 28	13 28	13 27	13 23	.....	*14 0	14 1	14 2	.....	61	62	65
23	α Libræ 6	30	15 24	15 19	15 11	15 0	*16 28	16 25	16 20	16 12	132	123	116	105
		35	15 20	15 16	15 10	14 59	*16 19	16 14	16 8	15 59	112	102	93	85
		40	15 18	15 15	15 10	15 2	*16 7	16 2	15 54	15 43	91	82	73	62
		45	15 18	15 17	15 16	15 17	15 52	15 44	15 31	15 17	67	56	40	25
25	29 Ophiuchi 6	30	16 26	16 16	16 2	15 48	17 20	17 19	17 16	17 9	189	177	166	154
		35	16 15	16 7	15 56	15 41	*17 19	17 17	17 12	17 4	165	155	146	137
		40	16 8	15 0	15 49	15 38	*17 15	17 12	17 6	16 58	149	139	128	118
		45	16 1	15 55	15 45	15 34	*17 9	17 5	16 58	16 50	130	121	112	103
July 8	Lat. 8852 9½	30	17 31	17 32	17 35	17 39	18 29	18 24	18 21	18 19	26	17	10	3
		35	17 40	17 41	17 44	17 49	18 32	18 27	18 22	18 19	16	8	359	351
		40	17 50	17 53	17 58	18 8	18 35	18 29	18 21	18 8	7	359	345	316
		45	18 5	18 11	.....	.....	18 35	18 25	.....	.....	355	340	.....	.....
21	δ Libræ 4½	30	14 52	14 50	14 46	14 39	.....	.....	*15 51	15 48	.....	.....	131	124
		35	*14 47	14 45	14 42	14 36	.....	.....	*15 42	15 37	.....	.....	111	102
		40	*14 43	14 42	14 40	14 37	.....	.....	*15 31	15 24	.....	.....	92	81
		45	.....	*14 41	14 41	14 40	.....	.....	*15 14	15 5	.....	.....	66	54
24	B.A.C. 6287 6	30	*17 8	17 4	16 59	16 52	.....	.....	*18 3	18 1	.....	.....	165	155
		35	*17 1	16 59	16 54	16 49	.....	.....	*17 59	17 56	.....	.....	145	134
		40	*16 57	16 55	16 52	16 48	.....	.....	*17 53	17 48	.....	.....	125	114
		45	.....	*16 52	16 51	16 50	.....	.....	*17 42	17 36	.....	.....	102	92
25	ε Sagittarii 4	30	17 0	16 41	16 25	16 9	17 13	17 22	17 23	17 19	339	212	194	179
		35	16 40	16 29	16 17	16 2	17 27	17 27	17 25	17 20	190	189	175	159
		40	16 30	16 22	16 11	16 0	17 28	17 27	17 24	17 18	178	167	157	143
		45	16 22	16 16	16 7	15 57	17 27	17 24	17 20	17 13	158	148	139	127
27	9 Aquarii 6	30	12 22	12 7	11 52	11 44	13 51	13 34	13 16	13 4	116	95	77	68
		35	12 28	12 13	12 1	11 50	13 55	13 38	13 21	13 6	106	86	70	59
		40	12 34	12 20	12 8	12 0	13 57	13 40	13 25	13 11	96	78	64	53
		45	12 41	12 29	12 19	12 10	13 57	13 42	13 28	13 15	85	71	58	48

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OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
July 28	B.A.C. 7620 6	30	12 25	12 11	12 1	11 54	13 26	13 14	13 2	12 51	129	112	99	91
		35	12 26	12 15	12 4	11 58	13 37	13 24	13 13	13 3	120	105	93	84
		40	12 30	12 19	12 10	12 3	13 45	13 33	13 22	13 12	114	100	88	80
		45	12 36	12 25	12 17	12 10	13 52	14 41	13 30	13 20	106	95	84	77
Aug. 1	96 Piscium 6½	30	15 25	15 21	15 20	15 24	16 33	16 15	15 58	15 40	42	20	359	337
		35	15 41	15 40	.....	.....	16 33	16 12	.....	.....	31	15	.....	.....
		40	16 1	.....	.....	.....	16 28	.....	.....	.....	14	.....	.....	.....
		45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	B.A.C. 728 6½	30	14 10	10 9	10 10	14 12	15 9	15 2	14 57	14 54	31	21	14	8
		35	14 13	14 12	14 14	14 16	15 14	15 5	14 59	14 54	25	12	3	356
		40	14 32	14 33	14 35	14 44	15 17	15 7	14 59	14 51	17	3	351	338
		45	14 48	14 53	.....	.....	15 18	15 2	.....	.....	5	341	.....	.....
2	ε Arietis 5½	30	.....	.....	15 32	15 16	.....	.....	15 32	15 39	.....	45	Star	157
		35	.....	15 34	15 22	15 15	.....	15 52	15 55	15 56	.....	130	114	100
		40	15 43	15 31	15 23	15 19	16 12	16 12	16 10	16 9	134	115	103	92
		45	15 43	15 34	15 28	15 25	16 29	16 26	16 23	16 20	123	108	96	87
4	55 Tauri 7	30	15 11	15 12	15 15	15 20	16 6	16 2	15 59	15 58	20	14	7	0
		35	15 20	15 23	15 27	15 33	16 9	16 4	16 0	15 57	11	3	355	346
		40	15 32	15 35	15 43	15 52	16 11	16 4	15 56	15 52	1	351	Star	338
		45	15 48	16 0	.....	.....	16 8	16 0	.....	.....	346	Star	15	Star
4	B.A.C. 1351 6½	30	16 39	16 38	16 40	16 44	17 53	17 44	17 37	17 32	45	35	25	17
		35	16 49	16 48	16 49	16 52	17 59	17 49	17 41	17 34	37	26	16	-7
		40	17 2	17 0	16 59	17 2	18 3	17 52	17 43	17 35	30	17	6	355
		45	17 14	17 13	17 14	17 23	18 5	17 54	17 43	17 27	21	8	354	328
23	γ Capricor. 5	30	.....	.....	.....	.....	.....	.....	.....	.....	Star	.....	.....	.....
		35	11 24	10 52	10 35	10 23	11 24	11 21	11 12	11 0	29	157	143	128
		40	11 3	10 45	10 32	10 20	11 50	11 39	11 28	11 15	162	146	130	120
		45	10 50	10 44	10 32	10 23	12 0	11 49	11 38	11 26	150	135	123	113
27	44 Piscium 6	30	.....	.....	.....	19 1	.....	.....	.....	19 1	Star	.....	.....	250
		35	19 30	19 11	18 53	18 35	19 30	19 35	19 34	19 29	15	232	218	203
		40	19 5	18 56	18 43	18 29	19 51	19 47	19 42	19 36	203	197	188	179
		45	18 56	18 48	18 38	18 26	19 54	19 50	19 45	19 38	178	173	165	157
28	77 Pisc. pr. 7	30	10 17	*10 17	.....	.....	11 12	11 10	11 90	*11 10	75	69	67	65
		35	10 22	10 22	*10 23	.....	11 21	11 19	11 18	*11 18	67	63	61	59
		40	10 29	10 29	*10 30	.....	11 30	11 27	11 26	11 26	63	59	56	54
		45	10 38	10 38	*10 39	.....	11 38	11 35	11 33	11 33	61	56	52	50
31	Lal. 7753 7½	30	.....	18 8	17 35	17 17	.....	18 8	18 13	18 8	Star	45	115	93
		35	18 9	17 48	17 30	17 17	18 50	18 41	18 32	18 22	163	131	105	85
		40	18 1	17 45	17 32	17 22	*19 8	18 55	18 43	18 32	145	118	97	79
		45	18 1	17 47	17 37	17 28	19 15	19 3	18 51	18 40	129	109	89	73
Sep. 2	B.A.C. 1930 6½	30	14 22	*14 22	.....	.....	15 13	15 14	15 15	*15 17	59	51	44	40
		35	14 25	14 27	*14 29	.....	15 21	15 20	15 21	15 22	47	41	35	31
		40	14 31	14 32	14 36	*14 39	15 28	15 26	15 25	15 26	39	32	27	23
		45	14 38	14 40	14 43	*14 47	15 34	15 31	15 29	15 29	32	28	20	15
29	130 Tauri 6	30	13 36	13 33	13 33	13 34	14 37	14 33	14 30	14 28	48	41	33	27
		35	13 41	13 39	13 39	13 41	14 45	14 39	14 35	14 32	40	32	25	18
		40	13 48	13 47	13 48	13 50	14 50	14 44	14 39	14 35	31	23	15	9
		45	13 58	13 57	13 58	14 1	14 55	14 48	14 42	14 37	23	14	7	359
Oct. 21	44 Piscium 6	30	14 24	13 56	13 32	13 11	14 34	14 37	14 31	14 22	0	218	197	173
		35	14 2	13 44	13 29	13 11	14 53	14 48	14 40	14 29	203	191	175	155
		40	13 55	13 42	13 29	13 15	15 0	14 53	14 44	14 32	180	169	155	137
		45	13 53	13 42	13 31	13 20	15 1	14 54	14 45	14 33	158	148	135	119

* Below the horizon.

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OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
Oct. 22	96 Piscium 6½	30	17 48	17 44	17 37	17 29	18 44	18 43	18 41	18 36	160	162	166	164
		35	17 48	17 43	17 38	17 30	18 40	18 39	18 36	18 32	138	141	142	141
		40	17 49	17 45	17 40	17 34	18 31	18 31	18 28	18 23	112	117	116	116
		45	17 57	17 53	17 49	17 45	18 16	18 15	18 12	18 6	80	83	82	79
23	B.A.C. 728 6½	30	14 34	14 16	14 0	13 46	15 49	15 35	15 21	15 5	182	167	144	110
		35	14 34	14 19	14 6	13 55	15 51	15 38	15 23	15 8	159	145	121	198
		40	14 37	14 24	14 14	14 15	15 49	15 36	15 22	15 5	134	120	99	73
		45	14 43	14 33	14 26	14 21	15 44	15 31	15 20	14 59	110	96	62	50
24	B.A.C. 987 6½	30	.....	8 42	*8 35	.....	.....	8 42	*8 50	.....	Star 30's.	121	.....	.....
		35	8 36	8 33	*8 32	.....	8 57	9 2	9 5	*9 8	119	107	100	96
		40	8 36	8 34	*8 35	.....	9 12	9 14	9 16	9 18	104	96	91	88
		45	8 39	8 38	8 39	*8 41	9 24	9 25	9 26	9 27	97	89	85	83
25	Rumk. 1136 6	30	9 54	9 54	9 57	*10 0	10 50	10 47	10 44	10 43	32	25	17	11
		35	10 2	10 2	10 5	*10 9	10 55	10 50	10 47	10 45	23	16	9	2
		40	10 12	10 13	10 17	10 22	10 59	10 53	10 48	10 44	18	7	357	348
		45	10 23	10 27	10 32	10 40	11 1	10 53	10 44	10 40	7	354	337	Star 1's.
25	Lal. 8610 8	30	19 29	19 19	19 7	18 54	20 30	20 27	20 20	20 10	144	150	156	160
		35	19 27	19 18	19 6	18 53	20 22	20 19	20 14	20 6	120	127	135	138
		40	19 29	19 19	19 8	18 56	20 12	20 10	20 4	19 57	97	106	108	111
		45	19 44	19 28	19 15	19 3	19 44	19 52	19 48	19 42	Star 15's.	72	74	78
26	111 Tauri 6	30	.....	.....	12 14	12 4	.....	.....	12 25	12 33	Star 0's.	.....	115	95
		35	12 32	12 14	12 6	12 3	12 32	12 43	12 45	12 46	9	103	90	79
		40	12 21	12 13	12 8	12 5	13 0	12 59	12 57	12 56	99	86	78	70
		45	12 22	12 16	12 12	12 10	13 15	13 10	13 7	13 5	87	78	70	63
29	29 Cancri 6	30	14 37	14 32	14 30	14 30	15 44	15 36	15 31	15 28	35	31	27	23
		35	14 40	14 36	14 34	14 35	15 48	15 41	15 35	15 31	24	20	16	12
		40	14 46	14 43	14 42	14 43	15 51	15 43	15 37	15 32	13	9	5	0
		45	14 56	14 53	14 53	14 55	15 51	15 42	15 36	15 31	1	356	351	346
Nov. 22	B.A.C. 1526 6	30	.....	.....	.....	12 48	.....	.....	.....	12 48	.....	Star 2's.	.....	.....
		35	.....	13 18	13 0	12 36	.....	13 18	13 8	13 11	.....	133	108	.....
		40	13 21	13 2	12 46	12 33	13 52	13 43	13 36	13 28	156	132	110	94
		45	13 11	12 58	12 46	12 36	14 10	13 58	13 49	13 40	137	117	100	87
27	B.A.C. 3398 6	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		35	13 6	13 0	*12 58	.....	13 20	13 24	13 28	*13 32	99	88	81	75
		40	12 56	12 54	*12 54	.....	13 38	13 38	13 40	*13 42	71	66	62	58
		45	12 55	*12 54	*12 55	.....	13 49	13 48	13 48	13 49	54	52	49	47
Dec. 17	B.A.C. 728 6½	30	12 54	12 42	12 29	12 15	14 3	13 56	13 45	13 31	156	155	150	140
		35	12 58	12 48	12 36	12 26	13 57	13 49	13 38	13 23	129	126	120	109
		40	13 5	12 57	12 49	12 44	13 46	13 36	13 24	13 7	103	97	87	70
		45	13 22	.....	.....	.....	13 22	.....	.....	.....	Star 1'30" N.	.....	.....	.....
17	ξ Arietis 5½	30	14 36	.....	.....	.....	14 36	.....	.....	.....	Star 2's.	.....	.....	.....
		35	14 20	14 12	14 2	13 48	14 51	14 44	14 36	14 28	218	221	222	217
		40	14 5	13 57	13 48	13 35	14 56	14 52	14 45	14 37	189	190	189	187
		45	13 57	13 50	13 41	13 31	14 56	14 52	14 46	14 40	164	166	164	162
19	Rumk. 1136 6	30	8 31	8 22	8 17	8 14	9 36	9 27	9 19	9 13	70	57	46	37
		35	8 35	8 28	8 24	8 22	9 44	9 34	9 25	9 18	65	51	40	30
		40	8 42	8 37	8 33	8 32	9 51	9 40	9 31	9 23	60	45	33	22
		45	8 51	8 47	8 44	8 43	9 55	9 45	9 35	9 26	51	38	26	15
19	55 Tauri 7	30	10 9	9 57	9 48	9 42	11 20	11 13	10 58	10 45	89	55	35	21
		35	10 15	10 4	9 57	9 55	11 31	11 16	11 1	10 45	78	50	29	10
		40	10 24	10 16	10 11	10 9	11 30	11 15	10 59	10 42	63	40	18	5
		45	10 37	10 32	10 33	10 36	11 26	11 10	10 49	10 36	45	22	353	256

* Below the horizon.

OCCULTATIONS, 1866.

OCCULTATIONS OF STARS AND PLANETS BY THE MOON, VISIBLE IN THE
TERRITORY OF THE UNITED STATES WEST OF THE MISSISSIPPI RIVER.

Date.	Star's Name and Magnitude.	Latitude.	IMMERSION.				EMERSION.				ANGLE FROM VERTEX.			
			Longitude				Longitude				Longitude			
			h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3	h m 1 30	h 2	h m 2 30	h 3
Dec. 19	63 Tauri 6	30 ⁰	h m	h m	h m	h m	h m	h m	h m	h m	144 ⁰	130 ⁰	94 ⁰	46 ⁰
		35	12 16	12 0	11 45	11 33	13 36	13 20	13 3	12 44	113	95	65	30
		40	12 34	12 21	12 13	12 14	13 19	13 4	12 45	12 14	81	65	32	Star
		45	12 52	.....	.....	.....	12 52	.....	.....	.....	Star 2 nd	.....	.....	0 th n.
19	B.A.C. 1351 6½	30	12 15	11 57	11 40	11 26	13 33	13 17	13 1	12 46	172	156	124	80
		35	12 14	11 58	11 44	11 32	13 34	13 19	13 3	12 48	147	132	102	70
		40	12 16	12 3	11 51	11 41	13 31	13 17	13 3	12 48	120	105	83	59
		45	12 24	12 13	12 3	11 55	13 24	13 11	12 58	12 43	93	78	59	39
20	115 Tauri 5½	30	11 44	11 29	11 15	11 5	13 2	12 45	12 29	12 16	130	80	55	40
		35	11 44	11 31	11 20	11 11	13 4	12 48	12 33	12 20	107	72	48	33
		40	11 49	11 37	11 28	11 21	13 4	12 49	12 35	12 21	87	62	42	24
		45	11 57	11 47	11 39	11 34	13 0	12 47	12 33	12 19	67	48	29	12
21	26 Geminor. 6½	30	17 29	17 23	17 16	17 10	18 24	18 15	18 2	17 44	176	186	196	208
		35	17 19	17 11	17 2	16 52	18 21	18 14	18 4	17 51	155	162	170	175
		40	17 12	17 3	16 54	16 42	18 15	18 10	18 2	17 52	135	142	147	150
		45	17 6	16 58	16 47	16 37	18 8	18 3	17 57	17 48	116	121	145	148

4-09

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